SERVICE MANUAL

marantz

model 4140

Stereo 2+Quadradial 4

Console Amplifier

marantz

TABLE OF CONTENTS

SECTION	PAGE
Introduction	1
Service Notes	1
Selector Switch	1
Mode Switch	1
Buffer Amplifier	2
Balance Control	2
Pre-Amplifier	2
Main Amplifier	2
BTL (Balanced Transformerless) Connection	3
Power Supply Unit	3
Trouble Analysis	3
Power Amplifier Adjustment	3
Power Supply Adjustment	3
Meter Adjustment	3
Test Equipment Required for Servicing	4
Performance Verification	5
Parts List	22~29
Technical Specifications	30

LIST OF ILLUSTRATIONS

FIGURE

1.	AC Power Control Box Simplified Schematic	6
2.	Amplifier Output Load Box Simplified Schematic	7
3.	Front Panel Adjustment and Component Locations	7
4.	Main Chassis Component Locations (Top View)	8
5.	Rear Panel Adjustment and Component Locations	8
6.	Main Chassis Component Locations (Bottom View)	9
7.	Tape Moni., Hi Filter Unit Assembly P250 Component Locations	9
8.	Phono Equalizer Amplifier Assembly P300 Component Locations	10
9.	Loudness Unit Assembly P350 Component Locations	10
10.	Vari-Matrix Unit Assembly P500 Component Locations	10
11.	Meter Rectifier Unit Assembly P550 Component Locations	11
12.	Temperature Compensation Unit Assembly P580 Component Locations	11
13.	Power Amplifier Assembly P600 Component Locations	12
14.	Power Supply Unit Assembly P800 Component Locations	13
15.	AC Rectifier Assembly P850 Component Locations	13
16.	Balance Variable Resistor Unit Assembly P900 Component Locations	14
17.	Buffer, Pre-Amplifier Assembly PE01 Component Locations	14
18.	Tone Amplifier Assembly PD01 Component Locations	15
19.	Main-Remote Speaker Switch Unit Assembly PL01 Component Locations	15
20.	Tone Control Unit Assembly PJ01 Component Locations	16
21.	Schematic Diagram	17,18
22.	Exploded Mechanical Diagram	19,20

TABLE

1.	Test Equipment Required for Servicing	4

INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 4140 Solid-State Quadradial Console Amplifier.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the circuits.

The parts list furnish information by which replacement part may be ordered from the Marantz Company. A simple description is included for parts which can usually be obtained through local suppliers.

1. SERVICE NOTES

As can be seen from the circuit diagram the chassis of Model 4140 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. Tape Moni., High Filter Unit ..... mounted on P.W. Board, P250
2. Phono Equalizer Amplifier ..... mounted on P.W.Board, P300
3. Loudness Unit ..... mounted on P.W. Board, P350
4. Vari-Matrix Unit ..... mounted on P.W. Board, P500
5. Meter Rectifier Unit ..... mounted on P.W. Board, P550
6. Temperature Compensation Unit ..... mounted on P.W. Board, P580
7. Power Amplifier ..... mounted on P.W. Board, P600
8. Function Indicator Unit ..... mounted on P.W. Board, P650
9. Power Supply ..... mounted on P.W. Board, P800
10. AC Rectifier ..... mounted on P.W. Board, P850
11. Balance Variable Resistor Unit ..... mounted on P.W. Board, P900
12. Buffer., Pre-Amplifier ..... mounted on P.W. Board, PE01
13. Tone Amplifier ..... mounted on P.W. Board, PD01
14. Main-Remote Speaker Switch Unit ..... mounted on P.W. Board, PL01
15. Tone Control Unit ..... mounted on P.W. Board, PJ01

2. SELECTOR SWITCH

Signals from the PHONO jacks are applied to the phono-amplifiers and equalized to match the RIAA curve for flat frequency response.

The outputs of the phono-amplifiers and signals from the TUNER, CD-4/AUX and TAPE MONITOR IN jacks are led to the SELECTOR switch, S001. The SELECTOR switch selects one set of signals from PHONO, TUNER, CD-4/AUX and TAPE MONITOR IN jacks and sends them to the MONITOR switch and TAPE MONITOR OUT jacks. The selected signals are then applied to the MODE switch, S002.

PHONO and TUNER jacks are for 2-channel input signals, that is stereo signals. CD-4/AUX, TAPE MONITOR IN and TAPE MONITOR OUT jacks are 4-channel, that is quadraphonic signal.

3. MODE SWITCH

MODE switch S002 has positions of MONO, 2 CH, DISCRETE, VARI-MATRIX and SQ DECODER.

In the MONO position all input signals are mixed together and delivered to all four channels.

In the 2 CH position stereo signals are directly routed to the pair of front left (LF) and front right (RF) channels; the same signals at the LF and RF channels are fed to the rear left (LR) and rear right (RR) channels, respectively. When quadraphonic signals are applied to the input terminals, the LF and LR signals and RF and RR signals are separately added, thus the (LF + LR) signal is delivered to the LF and LR channels and the (RF + RR) signal is delivered to the RF and RR channels.

In the DISCRETE position the quadraphonic input signals are separately routed as 4-channel stereophonic signals to each channel. At this position, for ordinary stereo input signals, neither LR nor RR channels no signal to carry.

In the VARI-MATRIX position, 2-channel stereo input signals are converted into quadraphonic signals through the vari-matrix circuit; the input right and left channel signals are fed directly to the LF and RF channels, while the signals to the LR and RR channels are synthesized from the 2-channel input signals under the control of the DIMENSION control.

The LR and RR channel signal components are controlled by the DIMENSION control as shown below.

DIMENSION control setting	LR output	RR output
Bottom	LF + RF	RF + LF
Center	LF	RF
Top	LF – RF	RF – LF

When the DIMENSION control is set at the bottom the LR and RR channel signals become manaural, at the center are stereophonic, and at the top are out of phase, thus providing vanished sound image positioning.

In the SQ DECODER position, "compatible stereo-quadraphonic (SQ) record" developed by CBS is ideally decoded into 4-channel signals. This requires incorporation of the adapter, Model SQA-1, into the set.

When the MONITOR switch is set to the ON position, signals from the TAPE MONITOR OUT terminals are in discrete mode regardless of the MODE switch setting. In the OFF position, the signals are processed into the mode indicated by the MODE switch in the MONO, 2 CH, or DISCRETE position of the MODE switch, while signals remain in discrete mode in the VARI-MATRIX and SQ DECODER positions.

4. BUFFER AMPLIFIER

Signals passed through the MODE switch are then low-impedance-transfered through the buffer amplifier, thus obtained low-impedance outputs are then led to the balance and volume circuits.

5. BALANCE CONTROL

Signals passed through the buffer amplifiers go into the balance control circuits, in which the signals are controlled by three balancers: the FRONT L-R, REAR L-R, and FRONT-REAR. By setting the FRONT-REAR balancer to the "FRONT" side and the FRONT L-R balancer to the "L" side, for example, only the front left (LF) channel is drived.

6. PRE-AMPLIFIER

Signals passed through the balance and volume control circuits are led to the tone control circuits. Hi and low frequency response can be varied with the BASS, MID and TREBLE controls. These controls permit separate adjustment of front stereo pair of channels (LF, RF) and rear stereo pair of channels (LR, RR).

7. MAIN AMPLIFIER

The output signals from pre-amplifier are led to the main amplifier through the highcut filter circuit. The transistors H601 and H603 from a differential amplifier, directly coupled to the transistor H605.

The transistor H605 drives the inverters H611 and H613 which, in turn, drive the power stage consisting of H001 and H002. Transistors H607 and H609 compose a protection circuit.

The protection circuit will operate when an excessive current flows into the power transistor,

to limit current or to control the power transistors so that do not operate beyond the safety area.

In case either excessive current flows, or the load becomes almost entirely reactive, in the power stage, the transistors H607 and H609 and the diodes H622 and H624 are operated through the resistors R642 and R644, so that the power transistors are protected from damage.

8. BTL (Balanced Transformerless) CONNECTION

This power amplifier is designed to operate in either 2-channel or 4-channel modes, depending on the setting of the POWER MODE switch that incorporates phase-conversion and power switch for BTL connection.

With this switch placed in the 25Wx4 position, this unit operates as a 25W 4 channel amplifier. With the switch placed in the 70Wx2 position, the unit operate as a 70W 2 channel amplifier, in which case, the power output is obtained only from FRONT SPK terminals.

The transistor H626 convert the phase of channel-1 amplifier and channel-3 amplifier.

9. POWER SUPPLY UNIT

The power supply unit consisting of the transistors H801 and H802, operating as an automatic voltage regulator, provides +35V DC to all the amplifiers except the main amplifier.

The transistors H803, H804 and H805 operate the relay L801 that protects speakers from destruction, and has a time lag of from three to five seconds, for other transistors to work stably.

10. TROUBLE ANALYSIS

1. Excessive line consumption	a. Check for shorted H851 through H854, C003, C004. b. Check for shorted transistor H001 through H008. Check L001 for short.
2. No line consumption or zero bias	a. Check line cord, fuse, shorted H581, H582. b. Check for open rectifiers H851 through H854, or open L001.
3. Excessive hum and noise	a. Check filter capacitors C003, C004, H801, H802.
4. Parasitic oscillation	a. Check for defective C607, C608, C619, C620, C621, C622.

11. POWER AMPLIFIER ADJUSTMENT

1. Connect a VTVM between J629 and J613 and adjust the trimming resistor R628 until the VTVM reads 10mV DC. For the other channel, connect the VTVM between J630 and J614 and adjust the R629 for the same reading.
2. Connect a VTVM between J623 and J629 and adjust the trimming resistor R613 until the VTVM reads 0V DC. For the other channel, connect the VTVM between J623 and J630 and adjust the trimming resistor R614 for the same reading.

12. POWER SUPPLY ADJUSTMENT

Connect a VTVM between J802(−) and J804(+) and adjust R806 until the VTVM reads 35.0V under no signal condition.

13. METER ADJUSTMENT

1. Connect the audio oscillator to the AUX input, set audio oscillator frequency to 1KHz. Set SELECTOR switch to AUX.
2. With the distortion analyzer connected across the output load (8-ohm), set the analyzer on the 30V AC scale.

3. Apply the audio oscillator output until the distortion analyzer indicates 15V and adjust the trimming resistor R551 until the meter indicator reads +2.

14. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 4140 Solid-State Quadradial Console Amplifier.

Item	Manufacturer and Model No. (or equivalent)	Use
Distortion Analyzer	Hewlett Packard, Model 331A or 333A	Measures distortion and voltage of amplifier output.
Audio Oscillator	Weston Model CVO-100P (NOTE: Less than 0.02 percent residual distortion is required.)	Sinewave and squarewave signal source.
Oscilloscope	Tektronix, Model 503; Data, Model 555	Waveform analysis and trouble shooting.
VTVM	RCA Senior Volt-Ohmyst, model WV-98C	Voltage and resistance measurements.
AC Wattmeter	Simpson, Model 390	Monitors primary power consumption of amplifier.
AC Ammeter (0 to 10 amps)	Commercial Grade	Monitors amplifier output under short circuit condition.
Line Voltmeter (0 to 150 vac)	Commercial Grade	Monitors potential of primary power to amplifier.
Variable Autotransformer (0 to 140 vac, 10 amps).	Powerstat, Model 116B	Adjusts leve of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohms across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Power Supply Bleeder Resistor (10 ohms at 1W)	Commercial Grade	Discharges power supply filter capacitors prior to disassembly or resistance measurements.
Output Load Resistor (8Ω ± 0.5%, 100W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load Resistor (4Ω ± 0.5%, 100W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.

Table 1 Test Equipment Required for Servicing

15. PERFORMANCE VERIFICATION

Test Procedure

A. Test Equipment

Refer to Table 1 for required test equipment.

B. Preliminary Procedures

1. Make the test setup shown in Figure 1 with the instrument controls set in the following positions:

Line Switch	off
Variable-line Switch	variable
Watt Meter Switch	on
Variac	0 (fully CCW)
Load	8 ohms (0.5 mfd – off)
Audio Generator	frequency 1 KHz
Output	5V range
Gain	minimum
AC Volt Meter	30V range

2. Make sure that connections between the resistive load and the system terminals of the Model 4140 have negligible resistance compared with the resistance of the load itself. Appreciable resistance in wiring adds to the total load, resulting in inaccurate measurements of output power.
3. Connect amplifier output to load and connect AC cord to line power. Connect a shorting plug to the PHONO input jack of the model 4140.
4. Remove the top cover.

C. Total Hum and Noise Test

1. With shorting plugs connected to the CD-4/AUX input jacks and a 8-ohm resistive load connected across the speaker system output terminals, connect a distortion analyzer across the load.

   NOTE: In this test and tests that follow, if distortion analyzer used does not contain a built-in voltmeter, a VTVM may be substituted.

2. Set the distortion analyzer controls for voltage measurements and apply power to the amplifier. Set the VOLUME control fully CCW. Set the SELECTOR switch to CD-4/AUX and the MODE switch to DISCRETE.
3. If the distortion analyzer indicates more than 1.5mV, refer to the trouble analysis section of this manual.
4. Set the VOLUME control fully CW. If the distortion analyzer indicates more than 2mV, refer to the trouble analysis section of this manual.

D. Maximum Power Output

1. Connect the audio oscillator to the CD-4/AUX input. Set audio oscillator frequency to 1 KHz. Set SELECTOR switch to CD-4/AUX.
2. With the distortion analyzer connected across the output load (8-ohm), set the analyzer on the 30 AC scale.
3. Turn the analyzer on and increase the audio oscillator output to 180mV, and verify the analyzer indicates more than 14.2V.

E. Harmonic Distortion Test

1. Set the frequency of the audio oscillator and the distortion analyzer to 20KHz.
2. Set the controls of the analyzer for voltage measurement on the 30-volt scale.
3. Adjust the audio oscillator output level until the analyzer meter indicates 10.9 volts.
4. Switch the distortion analyzer to Set Level – Manual mode, and adjust SENSITIVITY for full scale reading on 0-1 scale.

5. Measure the total harmonic distortion with the analyzer and verify it is less than 0.3%.
   NOTE: Any parasitic oscillation in the amplifier will be displayed on the oscilloscope, when capacitance is switched into the load.
6. Switch the distortion analyzer back to SET LEVEL MANUAL.
   (Do not adjust sensitivity of analyzer.)
7. Change the frequency of the audio oscillator and distortion analyzer to 1KHz. Adjust audio oscillator output as necessary to have a full scale reading on the 0-1 scale on the analyzer.
8. Measure the distortion, verifying it is no greater than 0.3%.
9. Repeat steps 7 and 8, changing frequency to 20Hz.
   Distortion should be no more than 0.3%.
10. Check for parasitic oscillators; there should be none.

F. Channel Separation

1. Set audio oscillator to 20KHz. Connect oscillator to front left channel CD-4/AUX input only, with shorting plug (10K ohm) in all other channels CD-4/AUX input. Connect distortion analyzer to front left channel speaker output terminals.
2. Adjust oscillator output until distortion analyzer indicates 0 dB (2.8V).
3. Measure RF, LR, RR channel output. Distortion analyzer should indicate -30 dB or less.
4. Repeat step 1 and 2 with substituted channel driving.
5. If indication is not less than -30dB, adjust input wires to preamp board until reading is -30dB or less.

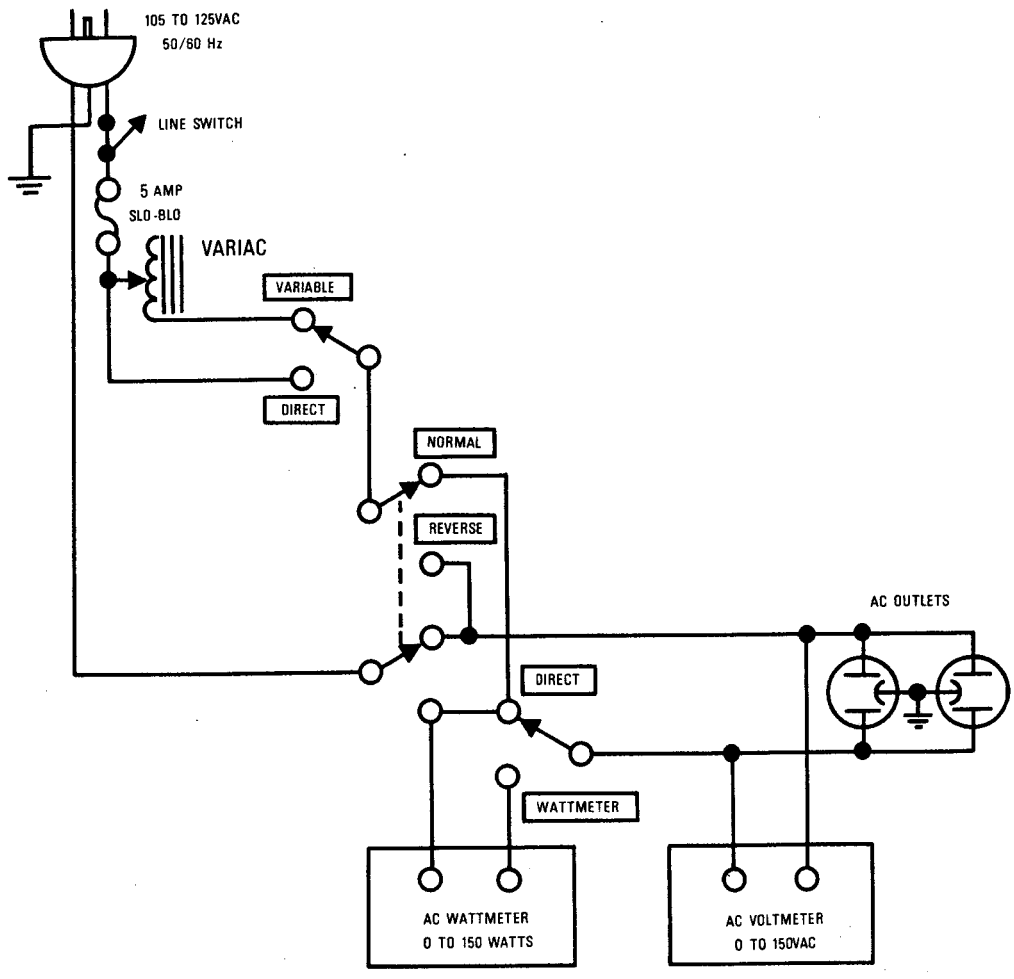

Figure 1. AC Power Control Box Simplified Schematic

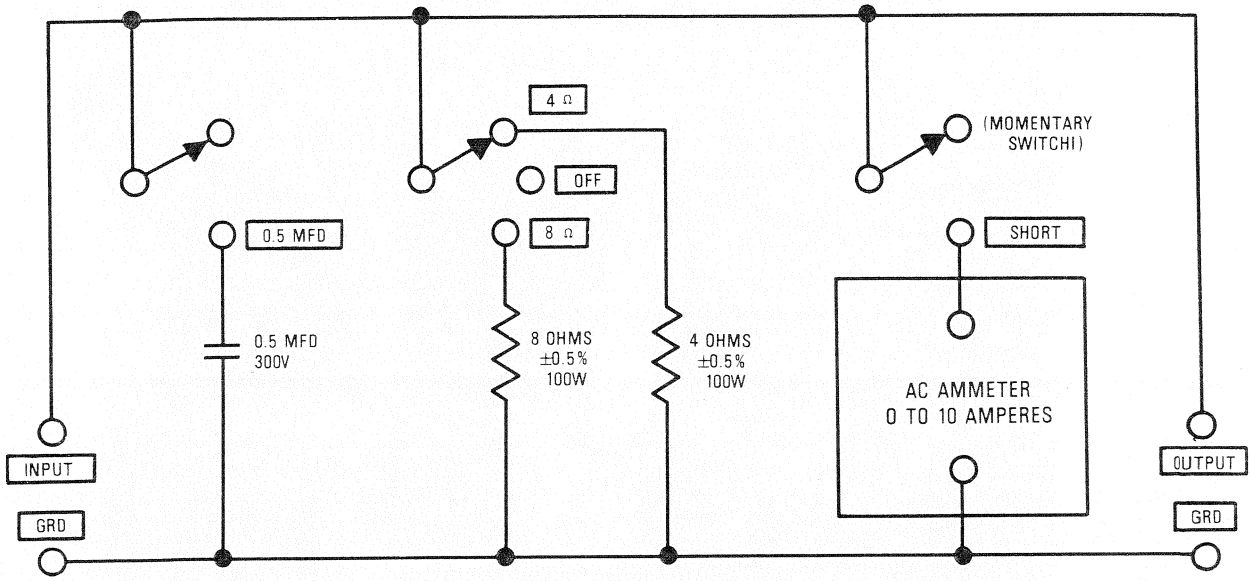

Figure 2. Amplifier Output Load Box Simplified Schematic

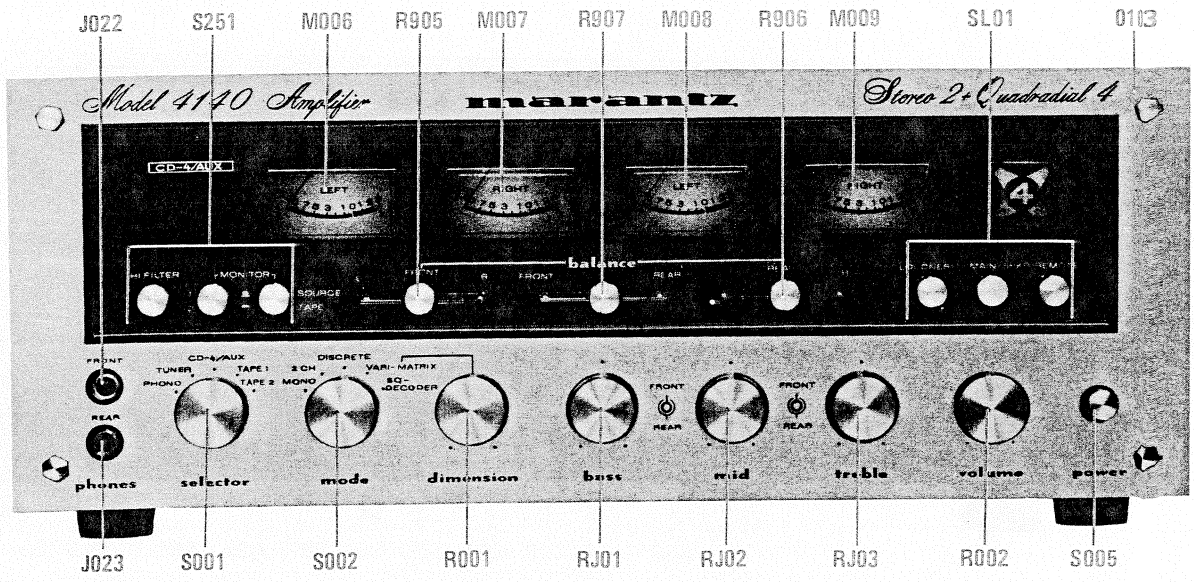

Figure 3. Front Panel Adjustment and Component Locations

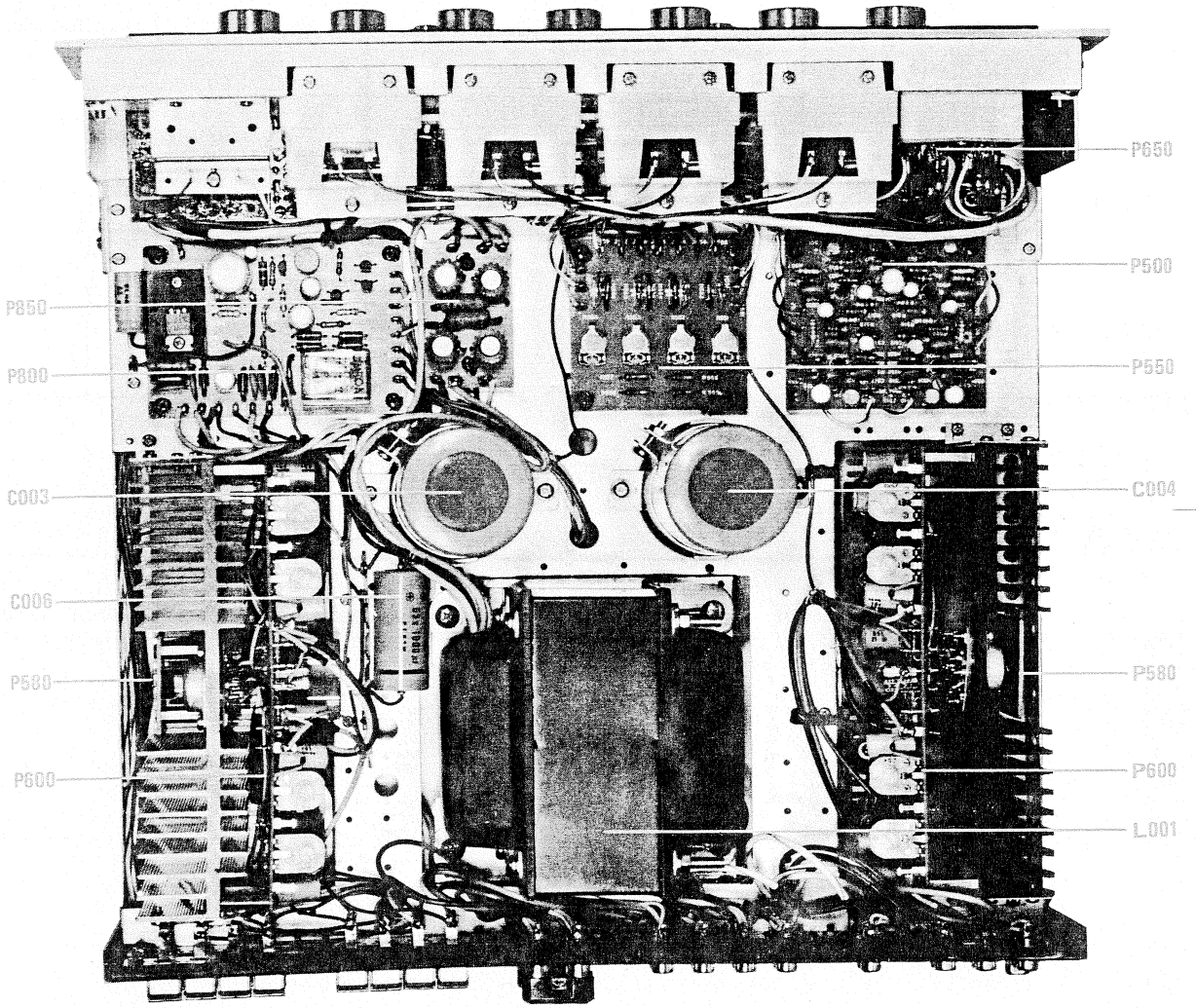

Figure 4. Main Chassis Component Locations (Top View)

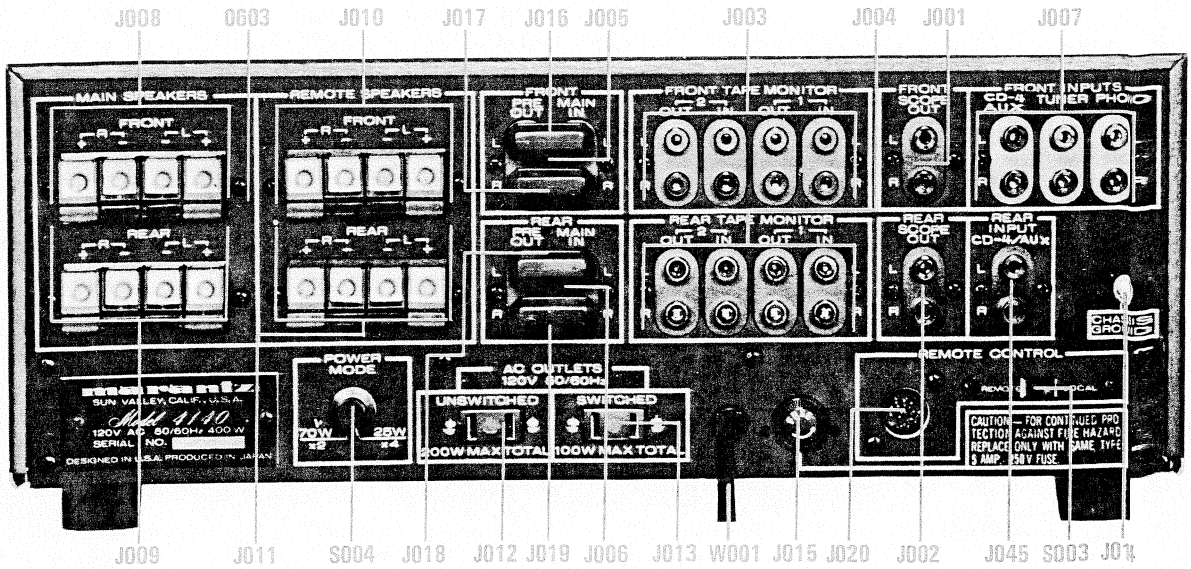

Figure 5. Rear Panel Adjustment and Component Locations

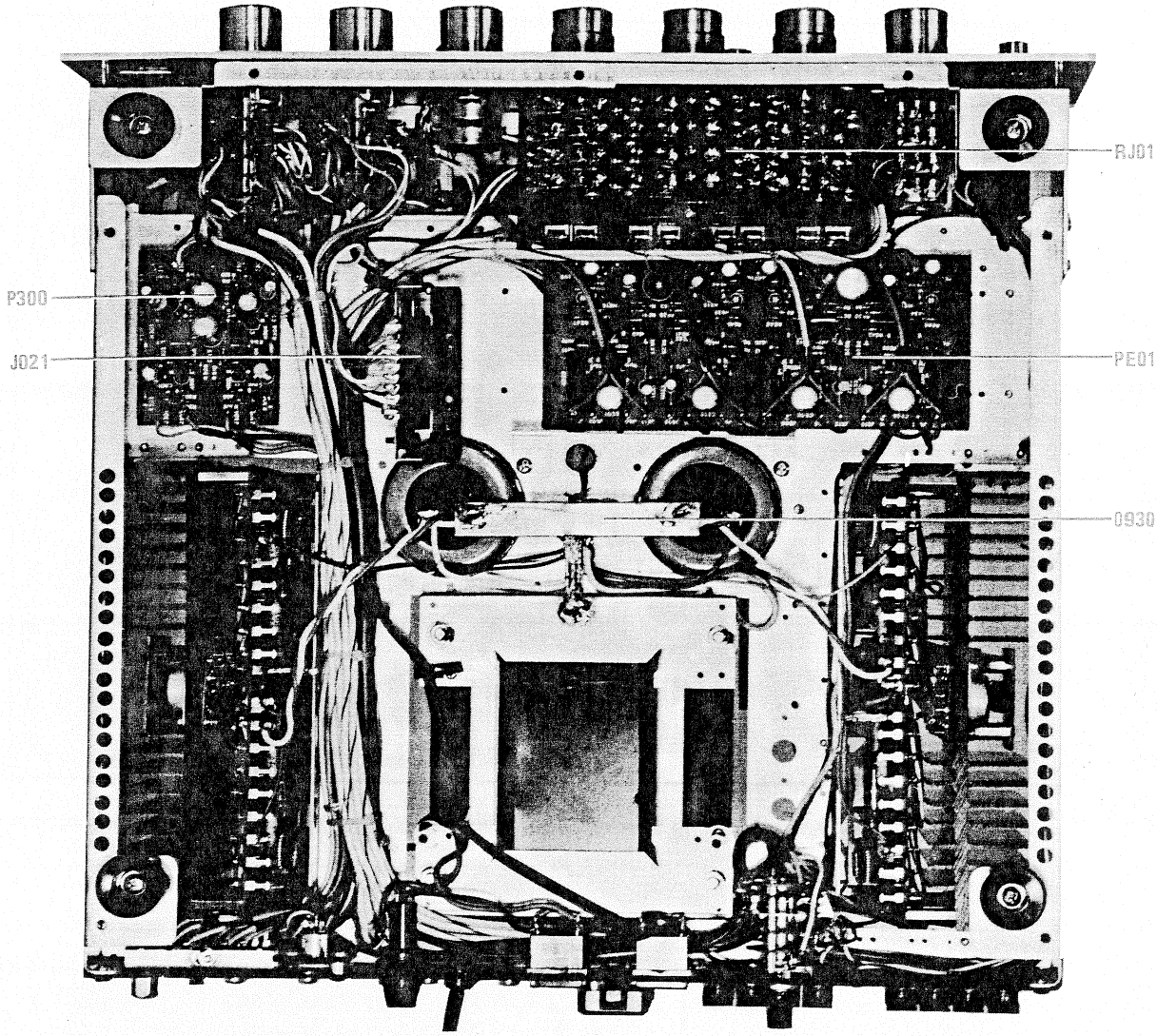

Figure 6. Main Chassis Component Locations (Bottom View)

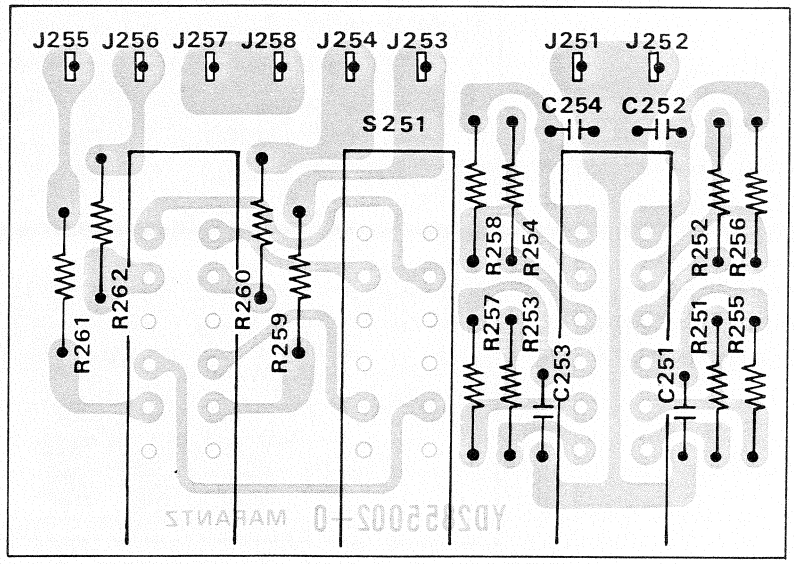

Figure 7. Tape Moni., Hi Filter Unit Assembly P250 Component Locations

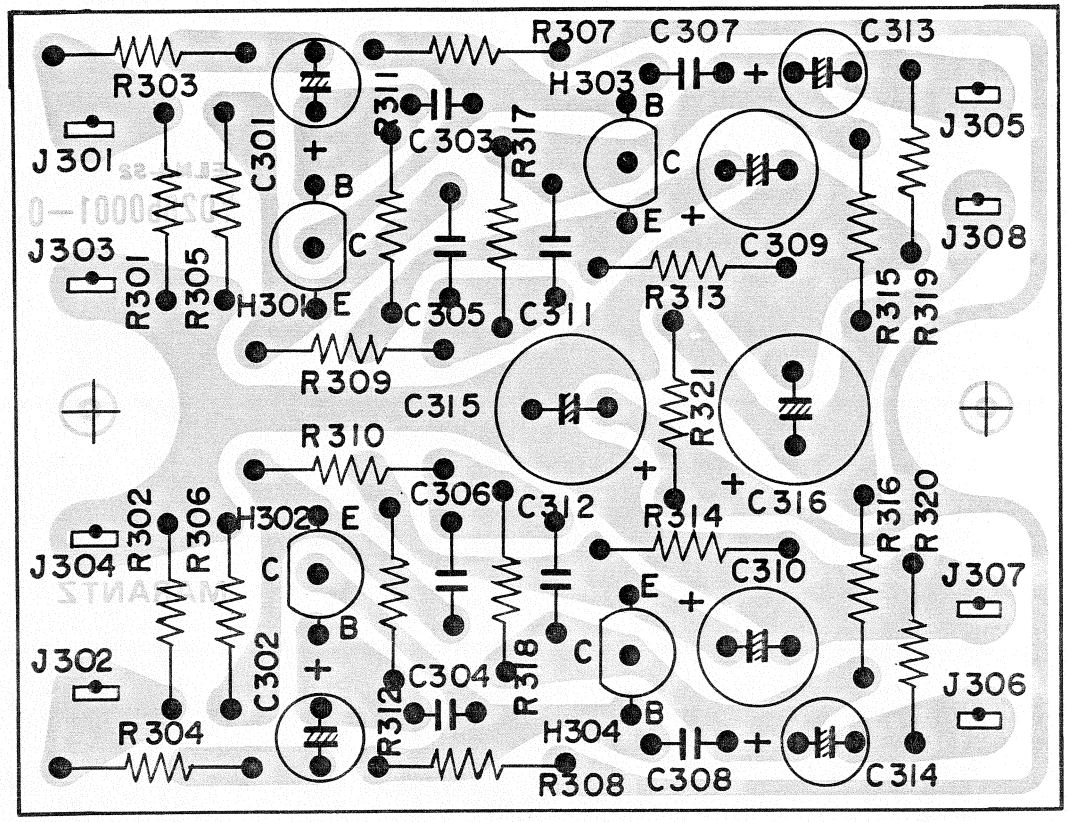

Figure 8. Phono Equalizer Amplifier Assembly P300 Component Locations

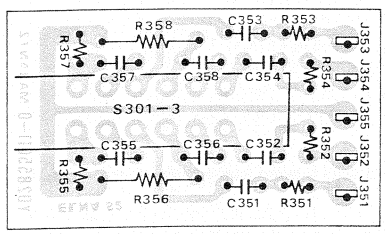

Figure 9. Loudness Unit Assembly P350 Component Locations

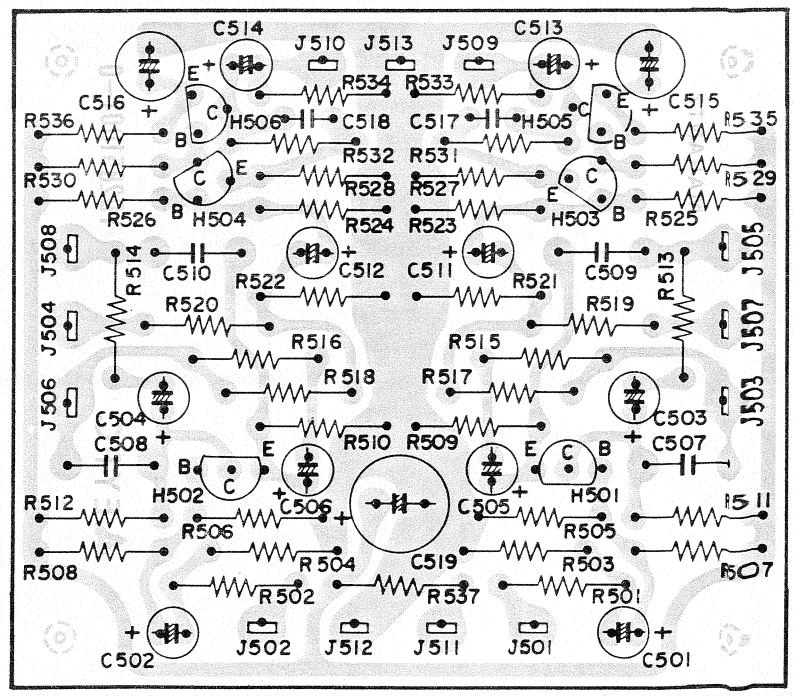

Figure 10. Vari-Matrix Unit Assembly P500 Component Locations

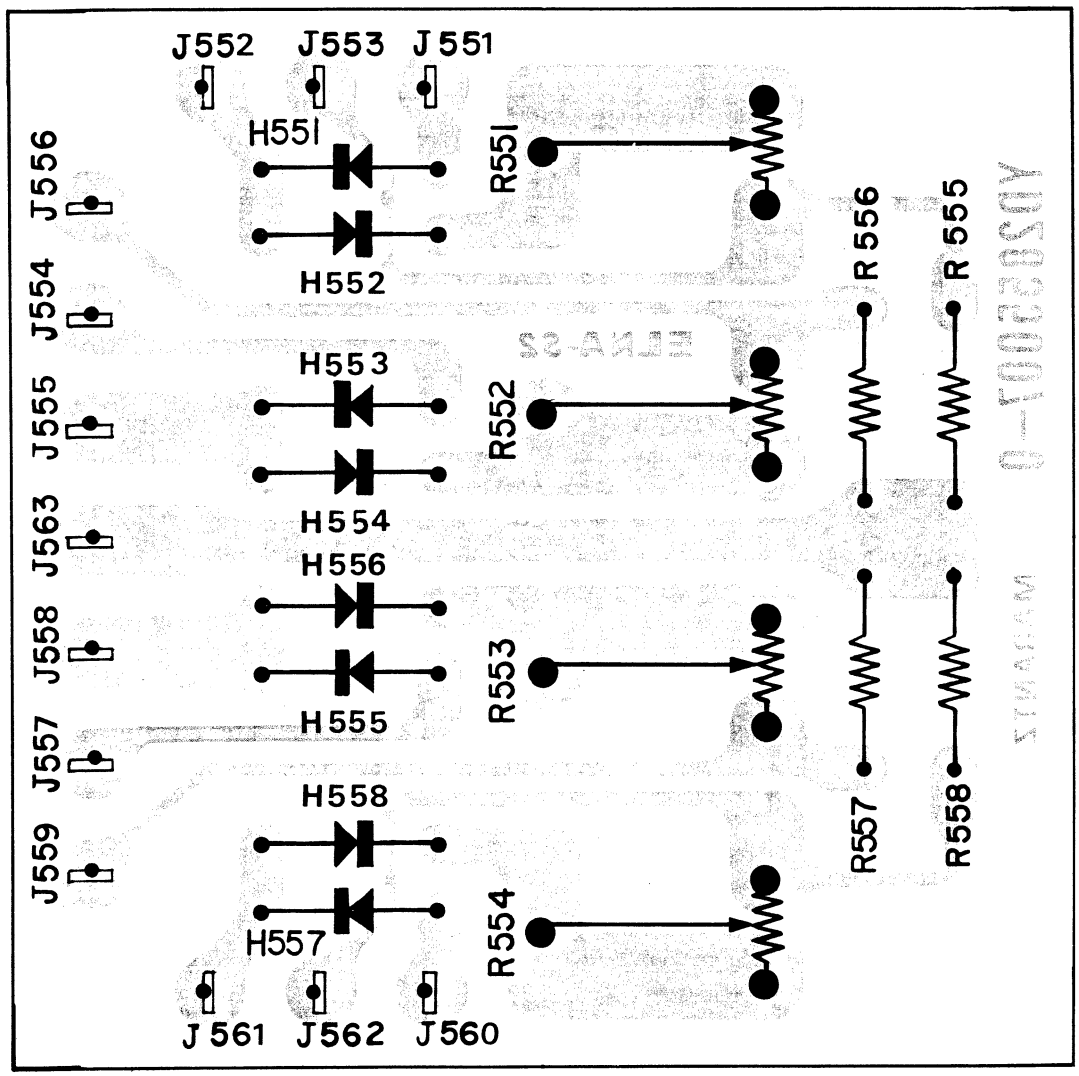

Figure 11. Meter Rectifier Unit Assembly P550 Component Locations

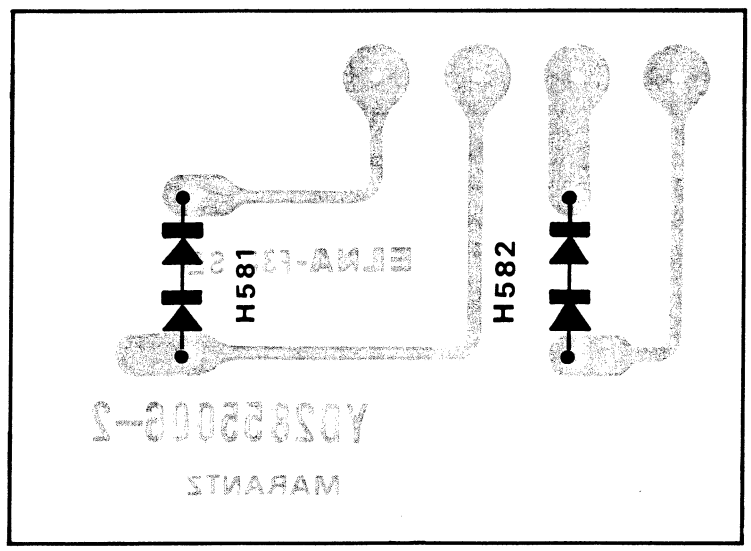

Figure 12. Temparature Compensation Unit Assembly P580 Component Locations

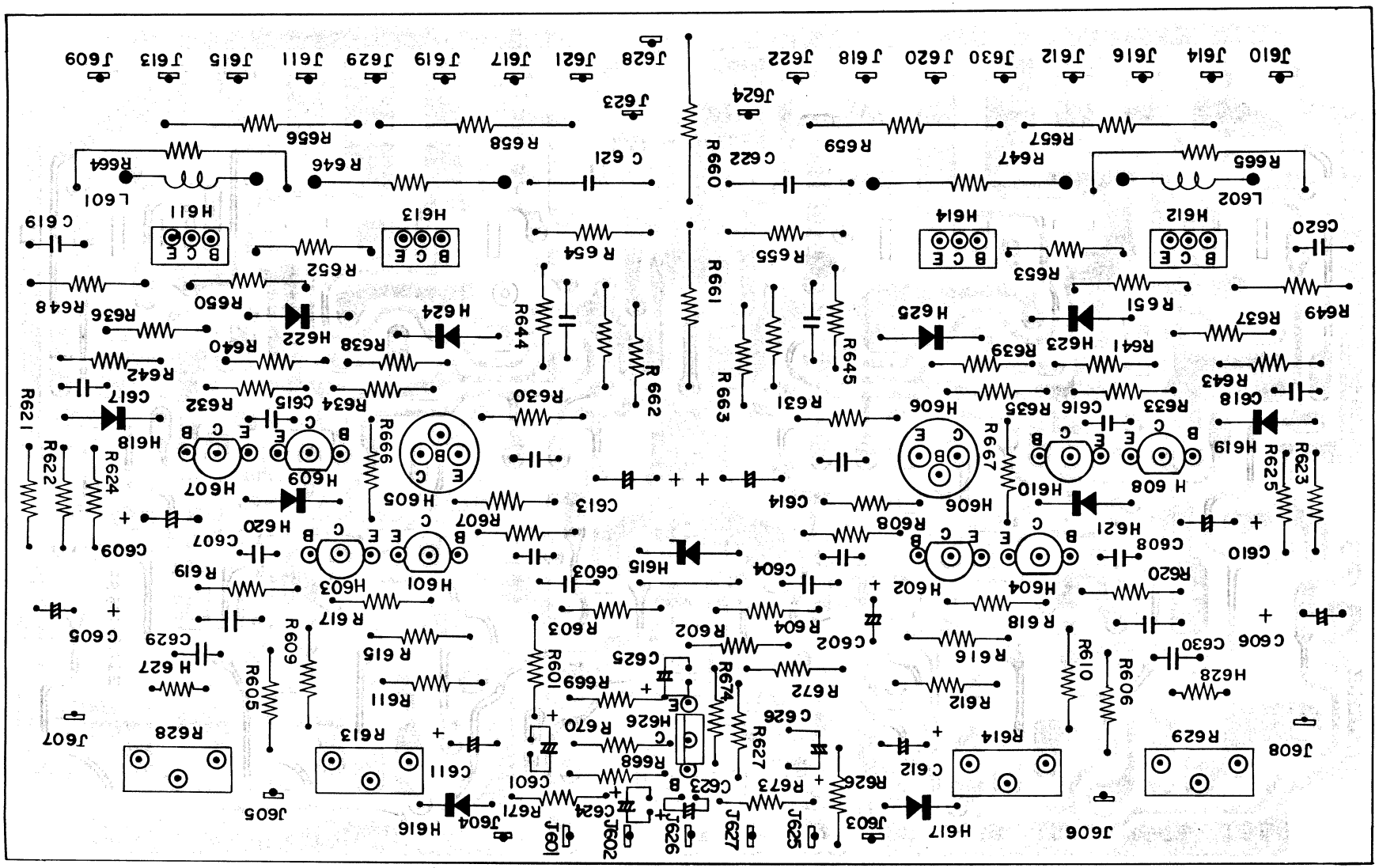

Figure 13. Power Amplifier Assembly P600 Component Locations

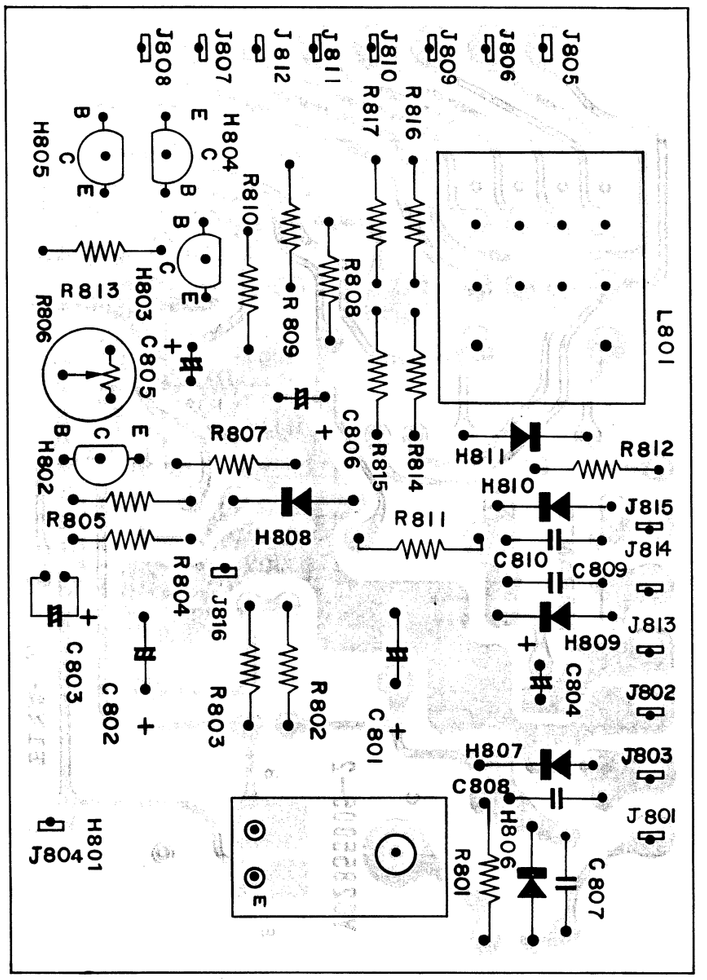

Figure 14. Power Supply Unit Assembly P800 Component Locations

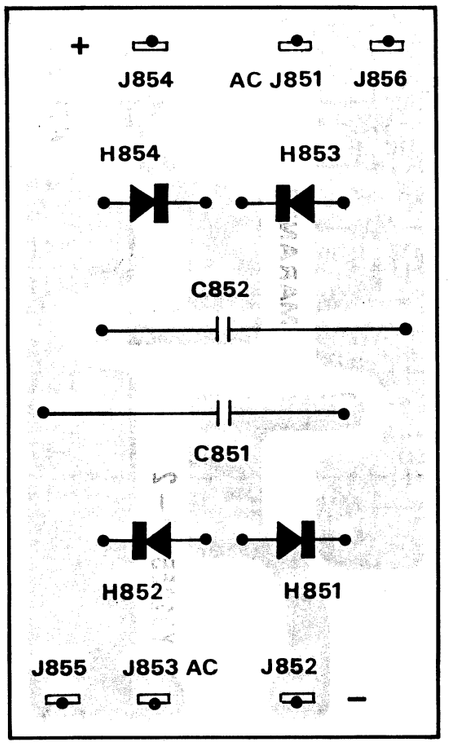

Figure 15. AC Rectifier Assembly P850 Component Locations

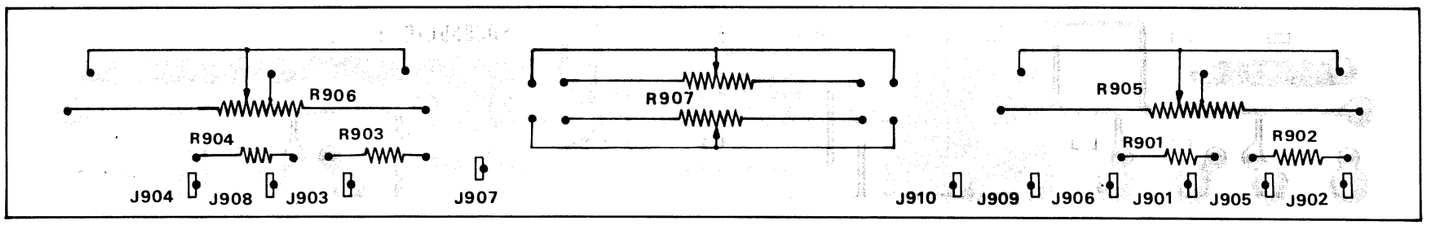

Figure 16. Balance Variable Resistor Unit Assembly P900 Component Locations

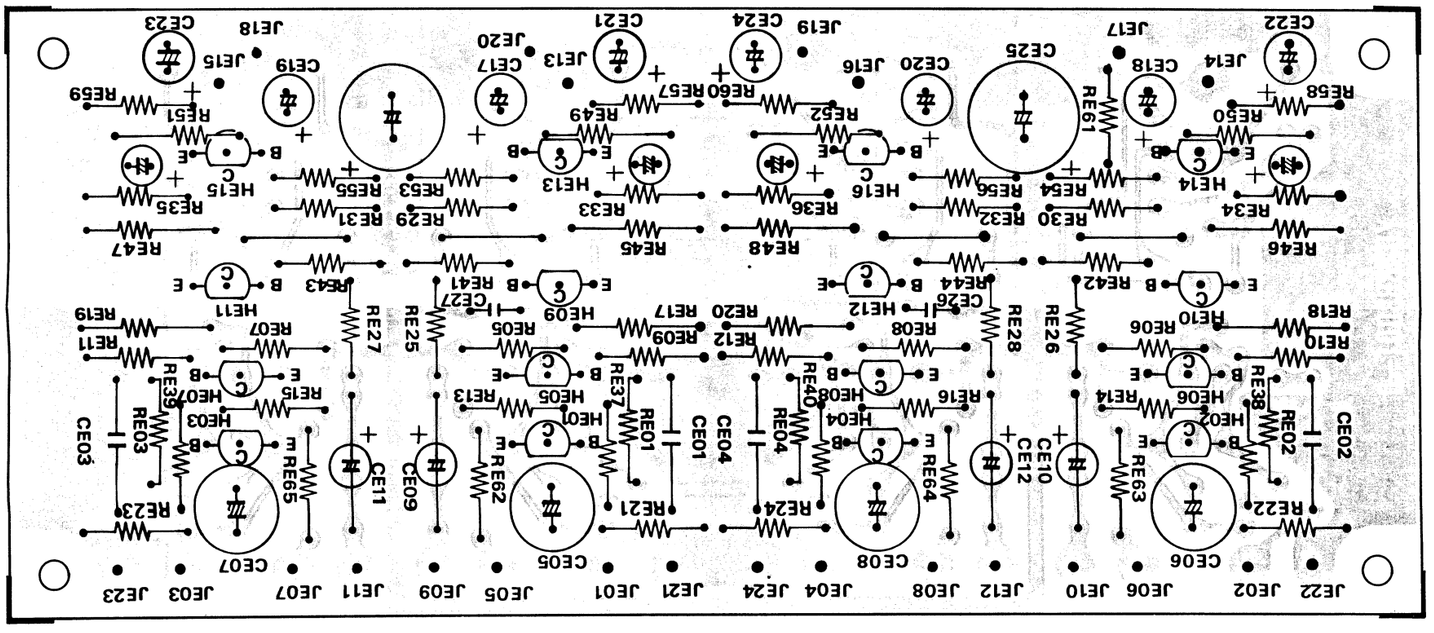

Figure 17. Buffer, Pre-Amplifier Assembly PE01 Component Locations

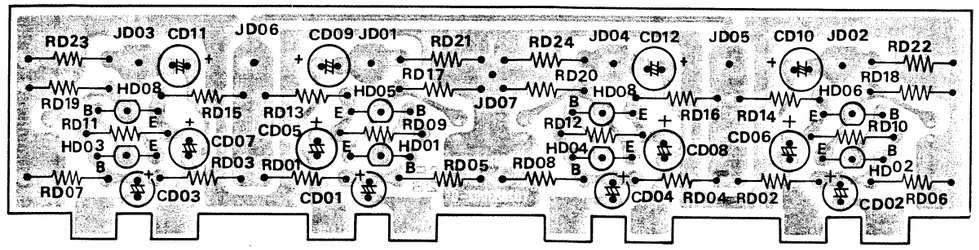

Figure 18. Tone Amplifier Assembly PD01 Component Locations

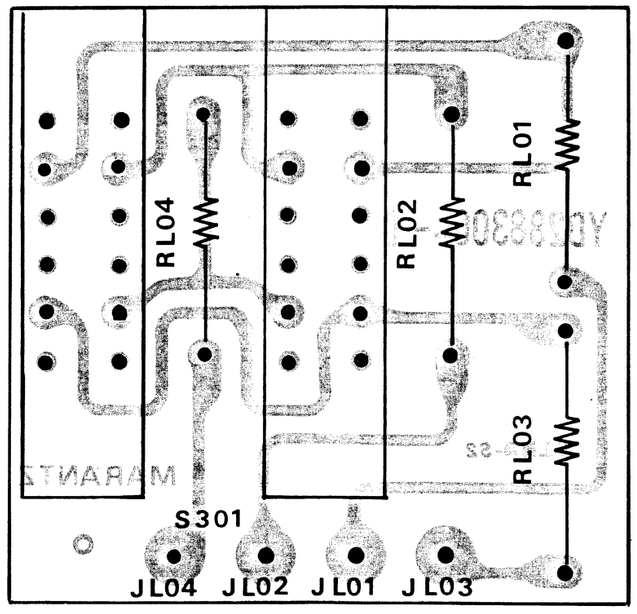

Figure 19. Main-Remote Speaker Switch Unit Assembly PL01 Component Locations

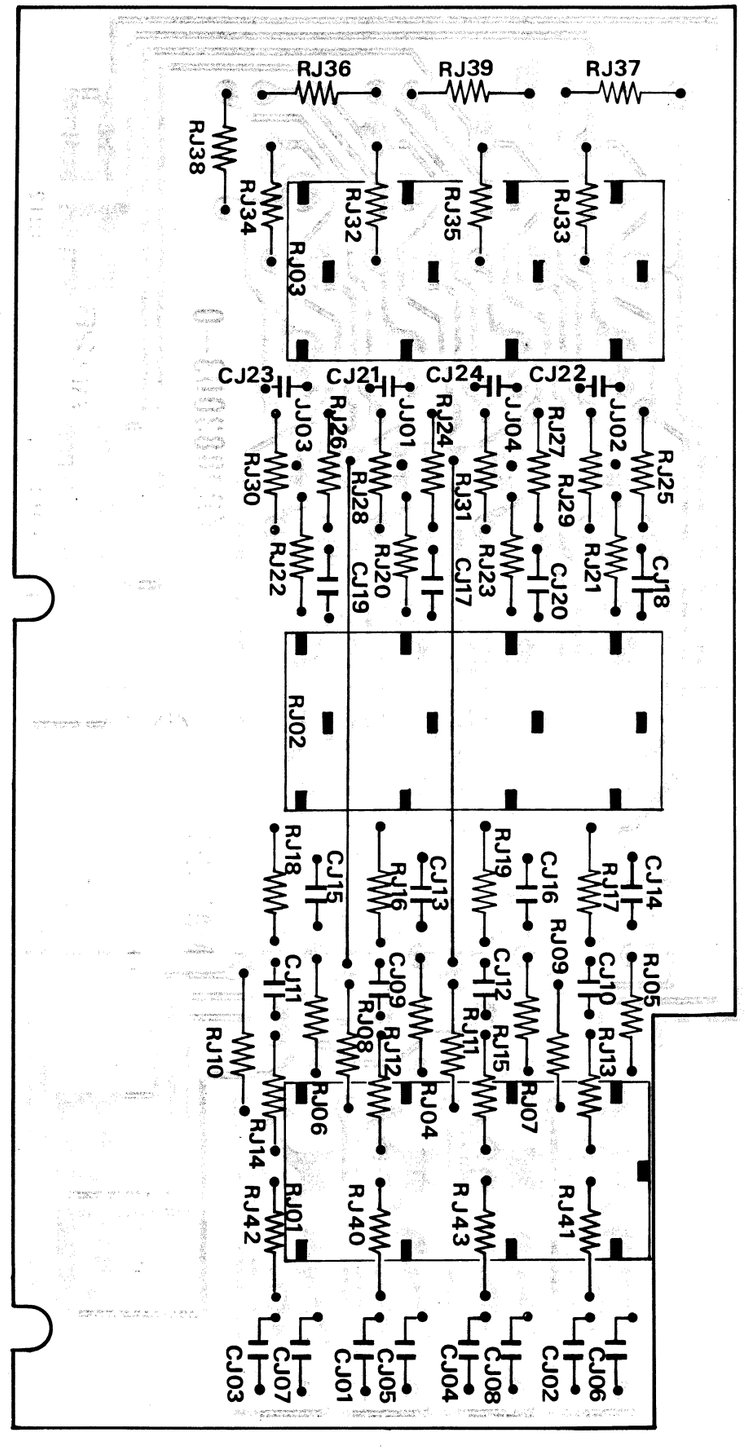

Figure 20. Tone Control Unit Assembly PJ01 Component Locations

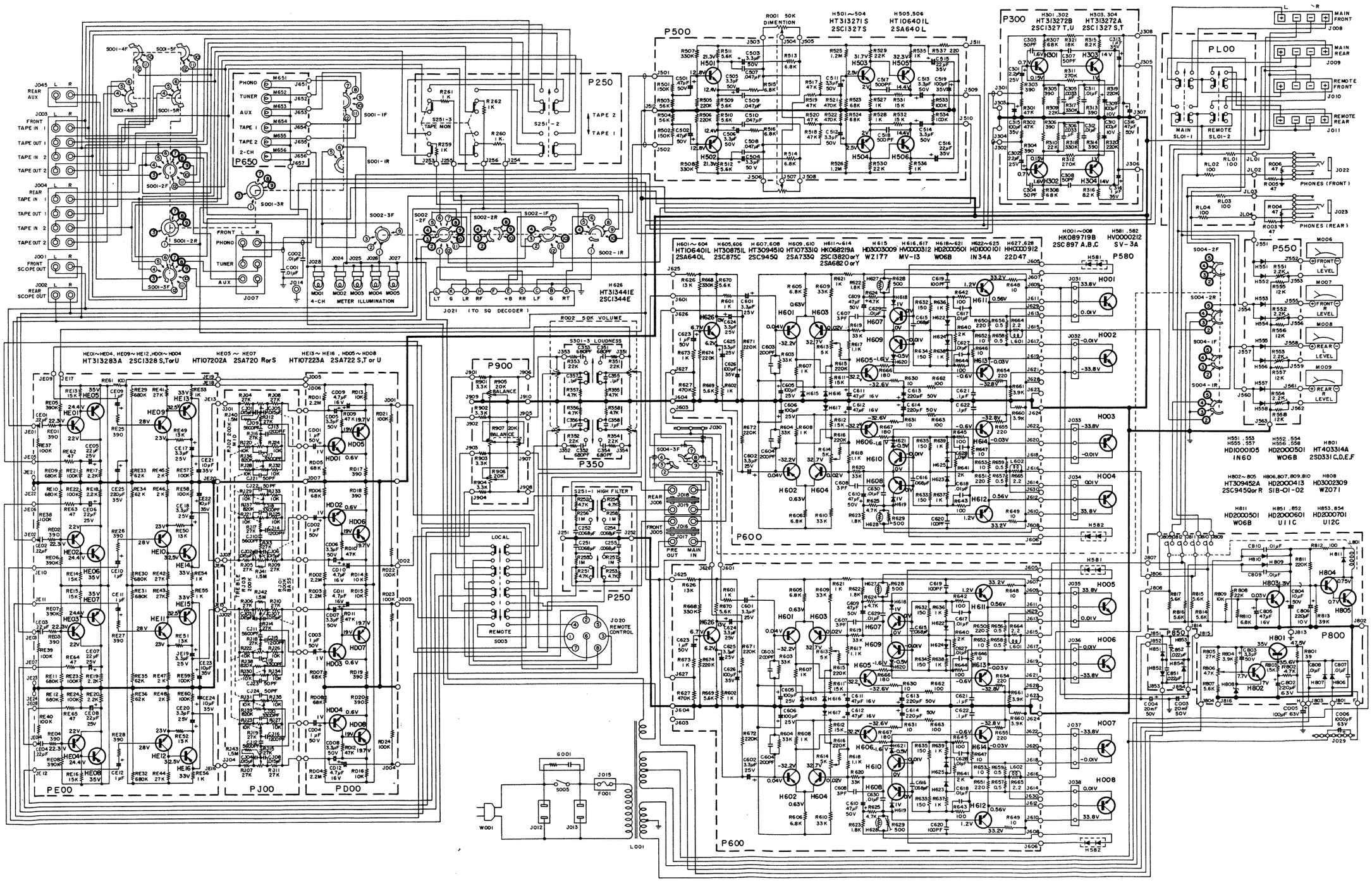

Figure 21. Schematic Diagram

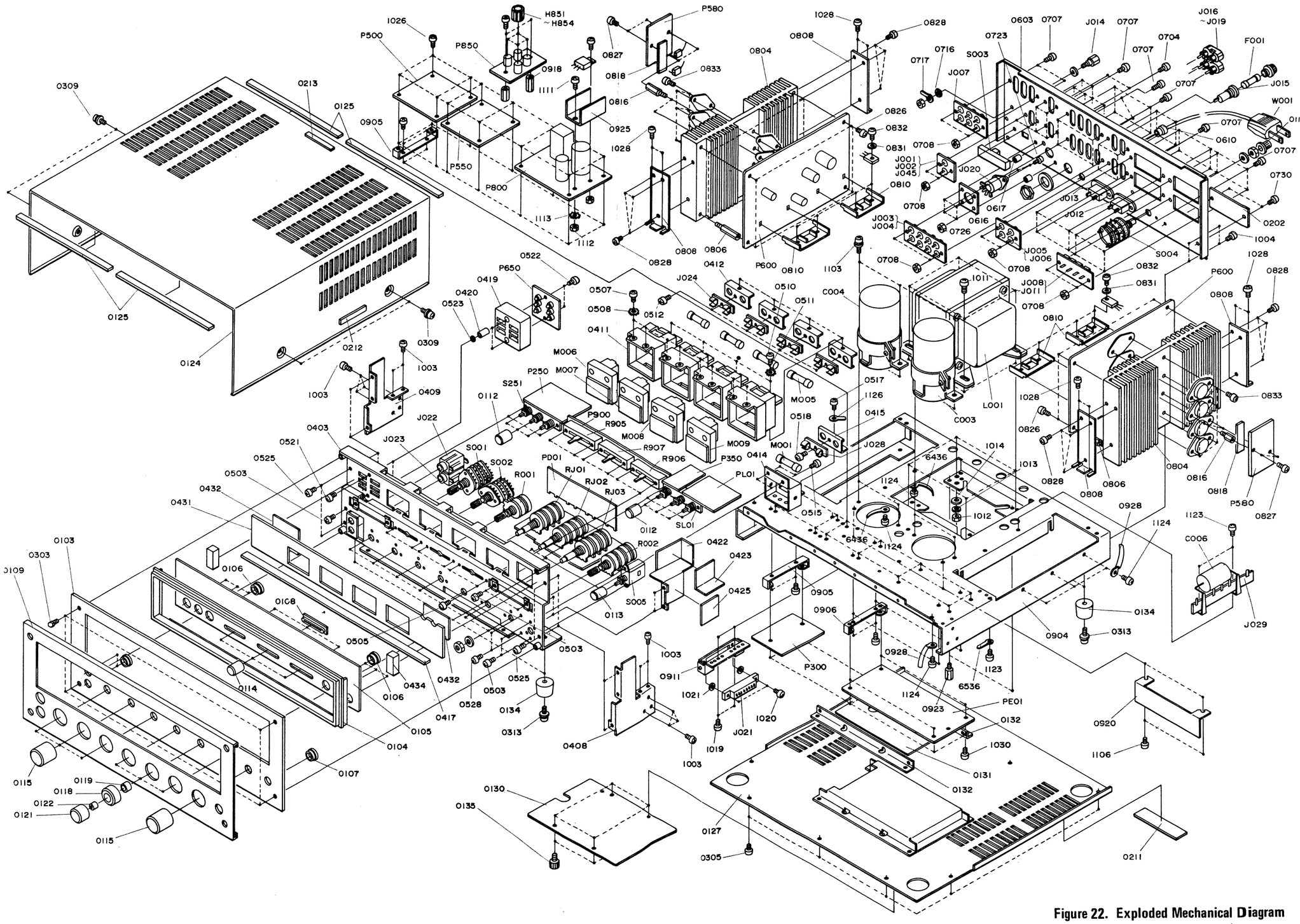

Figure 22. Exploded Mechanical Diagram

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
P300	YD2850001	P.W. Board, Phono Amp.
	ZZ2850001	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R301	RT0556314	56KΩ
R302	RT0556314	56KΩ
R303	RT0539114	390Ω
R304	RT0539114	390Ω
R305	RT0539114	390Ω
R306	RT0539114	390Ω
R307	RT0568314	68KΩ
R308	RT0568314	68KΩ
R309	RT0522314	22KΩ
R310	RT0522314	22KΩ
R311	RT0527414	270KΩ
R312	RT0527414	270KΩ
R313	RT0539114	390Ω
R314	RT0539114	390Ω
R315	RT0582214	8.2KΩ
R316	RT0582214	8.2KΩ
R317	RT0533414	330KΩ
R318	RT0533414	330KΩ
R319	RT0522414	220KΩ
R320	RT0522414	220KΩ
R321	RT0518314	18KΩ
		CAPACITORS
C301	EM2250251	Electroly, 2.2μF ±20%, 25V
C302	EM2250251	Electroly, 2.2μF ±20%, 25V
C303	DD1650001	Ceramic, 50PF ±10%, 50V
C304	DD1650001	Ceramic, 50PF ±10%, 50V
C305	DF1633205	Film, 0.0033μF ±10%, 50V
C306	DF1633205	Film, 0.0033μF ±10%, 50V
C307	DD1650001	Ceramic, 50PF ±10%, 50V
C308	DD1650001	Ceramic, 50PF ±10%, 50V
C309	EA1070109	Electroly, 100μF, 10V
C310	EA1070109	Electroly, 100μF, 10V
C311	DF1610305	Film, 0.01μF ±10%, 50V
C312	DF1610305	Film, 0.01μF ±10%, 50V
C313	EV1050351	Electroly, 1μF ±20%, 35V
C314	EV1050351	Electroly, 1μF ±20%, 35V
C315	EA1070359	Electroly, 100μF, 35V
C316	EA4760509	Electroly, 47μF, 50V
		MISCELLANEOUS
J301 ~ J308	YP1000094	Plug
		SEMICONDUCTORS
H301	HT313272B	Transistor, 2SC1327 T or U
H302	HT313272B	Transistor, 2SC1327 T or U
H303	HT313272A	Transistor, 2SC1327 S or T
H304	HT313272A	Transistor, 2SC1327 S or T
P500	YD2851001	P.W. Board, Vari Matrix
	ZZ2851001	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R501	RT0515414	150KΩ
R502	RT0515414	150KΩ
R503	RT0556314	56KΩ
R504	RT0556314	56KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R505	RT0522414	220KΩ
R506	RT0522414	220KΩ
R507	RT0533414	330KΩ
R508	RT0533414	330KΩ
R509	RT0556214	5.6KΩ
R510	RT0556214	5.6KΩ
R511	RT0556214	5.6KΩ
R512	RT0556214	5.6KΩ
R513	RT0568214	6.8KΩ
R514	RT0568214	6.8KΩ
R515	RT0568214	6.8KΩ
R516	RT0568214	6.8KΩ
R517	RT0547314	47KΩ
R518	RT0547314	47KΩ
R519	RT0547314	47KΩ
R520	RT0547314	47KΩ
R521	RT0547414	470KΩ
R522	RT0547414	470KΩ
R523	RT0568314	68KΩ
R524	RT0568314	68KΩ
R525	RT0512514	1.2MΩ
R526	RT0512514	1.2MΩ
R527	RT0510214	1KΩ
R528	RT0510214	1KΩ
R529	RT0522314	22KΩ
R530	RT0522314	22KΩ
R531	RT0515314	15KΩ
R532	RT0515314	15KΩ
R533	RT0510414	100KΩ
R534	RT0510414	100KΩ
R535	RT0510214	1KΩ
R536	RT0510214	1KΩ
R537	RT0522114	220Ω
		MISCELLANEOUS
J501 ~ J512	YP1000094	Plug
		CAPACITORS
C501	EE4740501	Electroly, 0.47μF ±20%, 50V
C502	EE4740501	Electroly, 0.47μF ±20%, 50V
C503	EE3350501	Electroly, 3.3μF ±20%, 50V
C504	EE3350501	Electroly, 3.3μF ±20%, 50V
C505	EE3350501	Electroly, 3.3μF ±20%, 50V
C506	EE3350501	Electroly, 3.3μF ±20%, 50V
C507	DF1647305	Film, 0.47μF ±10%, 50V
C508	DF1647305	Film, 0.47μF ±10%, 50V
C509	DF1647305	Film, 0.47μF ±10%, 50V
C510	DF1647305	Film, 0.47μF ±10%, 50V
C511	EE3350501	Electroly, 3.3μF ±20%, 50V
C512	EE3350501	Electroly, 3.3μF ±20%, 50V
C513	EE3350501	Electroly, 3.3μF ±20%, 50V
C514	EE3350501	Electroly, 3.3μF ±20%, 50V
C515	EA2260359	Electroly, 22μF +100%,-10%, 35V
C516	EA2260359	Electroly, 22μF +100%,-10%, 35V
C517	DD1650101	Ceramic, 500PF ±10%, 50V
C518	DD1650101	Ceramic, 500PF ±10%, 50V
C519	EA1070359	Electroly, 100μF +100%,-10%, 35V
		SEMICONDUCTORS
H501	HT313271S	Transistor, 2SC1327 S
H502	HT313271S	Transistor, 2SC1327 S
H503	HT313271S	Transistor, 2SC1327 S
H504	HT313271S	Transistor, 2SC1327 S

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H505	HT106401L	2SA640 L
H506	HT106401L	2SA640 L
PE01	YD2883001	P.W. Board, Buffer & Pre
	ZZ2883001	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
RE01	RT0539114	390Ω
RE02	RT0539114	390Ω
RE03	RT0539114	390Ω
RE04	RT0539114	390Ω
RE05	RN1039414	390KΩ ±10%
RE06	RN1039414	390KΩ ±10%
RE07	RN1039414	390KΩ ±10%
RE08	RN1039414	390KΩ ±10%
RE09	RN1068414	680KΩ ±10%
RE10	RN1068414	680KΩ ±10%
RE11	RN1068414	680KΩ ±10%
RE12	RN1068414	680KΩ ±10%
RE13	RT0515314	15KΩ
RE14	RT0515314	15KΩ
RE15	RT0515314	15KΩ
RE16	RT0515314	15KΩ
RE17	GU0522212	2.2KΩ
RE18	GU0522212	2.2KΩ
RE19	GU0522212	2.2KΩ
RE20	GU0522212	2.2KΩ
RE21	RT0510414	100KΩ
RE22	RT0510414	100KΩ
RE23	RT0510414	100KΩ
RE24	RT0510414	100KΩ
RE25	RT0539114	390Ω
RE26	RT0539114	390Ω
RE27	RT0539114	390Ω
RE28	RT0539114	390Ω
RE29	RN0568414	680KΩ
RE30	RN0568414	680KΩ
RE31	RN0568414	680KΩ
RE32	RN0568414	680KΩ
RE33	RT0562314	62KΩ
RE34	RT0562314	62KΩ
RE35	RT0562314	62KΩ
RE36	RT0562314	62KΩ
RE37	RT0522414	220KΩ
RE38	RT0522414	220KΩ
RE39	RT0522414	220KΩ
RE40	RT0522414	220KΩ
RE41	RT0527314	27KΩ
RE42	RT0527314	27KΩ
RE43	RT0527314	27KΩ
RE44	RT0527314	27KΩ
RE45	RT0520214	2KΩ
RE46	RT0520214	2KΩ
RE47	RT0520214	2KΩ
RE48	RT0520214	2KΩ
RE49	RT0513314	13KΩ
RE50	RT0513314	13KΩ
RE51	RT0513314	13KΩ
RE52	RT0513314	13KΩ
RE53	RT0510214	1KΩ
RE54	RT0510214	1KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RE55	RT0510214	1KΩ
RE56	RT0510214	1KΩ
RE57	RT0510414	100KΩ
RE58	RT0510414	100KΩ
RE59	RT0510414	100KΩ
RE60	RT0510414	100KΩ
RE61	RT0510114	100Ω
RE62	RT0547014	47Ω
RE63	RT0547014	47Ω
RE64	RT0547014	47Ω
RE65	RT0547014	47Ω
		CAPACITORS
CE01	DF1722405	Film, 0.22μF ±20%, 50V
CE02	DF1722405	Film, 0.22μF ±20%, 50V
CE03	DF1722405	Film, 0.22μF ±20%, 50V
CE04	DF1722405	Film, 0.22μF ±20%, 50V
CE05	EE2260251	Electroly, 22μF ±20%, 25V
CE06	EE2260251	Electroly, 22μF ±20%, 25V
CE07	EE2260251	Electroly, 22μF ±20%, 25V
CE08	EE2260251	Electroly, 22μF ±20%, 25V
CE09	EV1050251	Electroly, 1μF +40%, -20%, 25V
CE10	EV1050251	Electroly, 1μF +40%, -20%, 25V
CE11	EV1050251	Electroly, 1μF +40%, -20%, 25V
CE12	EV1050251	Electroly, 1μF +40%, -20%, 25V
CE17	EE3350251	Electroly, 3.3μF ±20%, 25V
CE18	EE3350251	Electroly, 3.3μF ±20%, 25V
CE19	EE3350251	Electroly, 3.3μF ±20%, 25V
CE20	EE3350251	Electroly, 3.3μF ±20%, 25V
CE21	EA1060359	Electroly, 10μF +50%, -10%, 35V
CE22	EA1060359	Electroly, 10μF +50%, -10%, 35V
CE23	EA1060359	Electroly, 10μF +50%, -10%, 35V
CE24	EA1060359	Electroly, 10μF +50%, -10%, 35V
CE25	EA2270359	Electroly, 220μF +50%,-10%, 35V
CE26	DK1710301	Ceramic, 0.01μF ±20%, 50V
CE27	DK1710301	Ceramic, 0.01μF ±20%, 50V
		SEMICONDUCTORS
HE01	HT313283A	Transistor, 2SC1328 S, T or U
HE02	HT313283A	Transistor, 2SC1328 S, T or U
HE03	HT313283A	Transistor, 2SC1328 S, T or U
HE04	HT313283A	Transistor, 2SC1328 S, T or U
HE05	HT107202A	Transistor, 2SA720 R or S
HE06	HT107202A	Transistor, 2SA720 R or S
HE07	HT107202A	Transistor, 2SA720 R or S
HE08	HT107202A	Transistor, 2SA720 R or S
HE09	HT313283A	Transistor, 2SC1328 S, T or U
HE10	HT313283A	Transistor, 2SC1328 S, T or U
HE11	HT313283A	Transistor, 2SC1328 S, T or U
HE12	HT313283A	Transistor, 2SC1328 S, T or U
HE13	HT107223A	Transistor, 2SA722 S, T or U
HE14	HT107223A	Transistor, 2SA722 S, T or U
HE15	HT107223A	Transistor, 2SA722 S, T or U
HE16	HT107223A	Transistor, 2SA722 S, T or U
		MISCELLANEOUS
JE01 ~ JE25	YP1000109	Plug
P550	YD2855007	P.W. Board, Meter
	ZZ2883107	P.W. Board Ass'y

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
		RESISTORS
R551	RA0202010	Trimming, 2.2KΩ ±30%
R552	RA0202010	Trimming, 2.2KΩ ±30%
R553	RA0202010	Trimming, 2.2KΩ ±30%
R554	RA0202010	Trimming, 2.2KΩ ±30%
R555	RT0512314	12KΩ ±5%, ¼W
R556	RT0512314	12KΩ ±5%, ¼W
R557	RT0512314	12KΩ ±5%, ¼W
R558	RT0512314	12KΩ ±5%, ¼W
		SEMICONDUCTORS
H551	HD1000105	Diode, 1N60
H552	HD2000501	Diode, W06B
H553	HD1000105	Diode, 1N60
H554	HD2000501	Diode, W06B
H555	HD1000105	Diode, 1N60
H556	HD2000501	Diode, W06B
H557	HD1000105	Diode, 1N60
H558	HD2000501	Diode, W06B
		MISCELLANEOUS
J551 ~ J563	YP1000099	Plug
0814	281910101	Support x 2
0826	51100306S	B.H.M. Screw x 10
0827	51100306S	B.H.M. Screw x 4
P600	YD2855004	P.W. Board, Main Amp x 2
	ZZ2883104	P.W. Board Ass'y x 2
		RESISTORS
		All resistors are ±5% and ¼W, unless otherwise indicated.
R601	RT0510214	1KΩ x 2
R602	RT0510214	1KΩ x 2
R603	RT0533314	33KΩ x 2
R604	RT0533314	33KΩ x 2
R605	RT0568214	6.8KΩ x 2
R606	RT0568214	6.8KΩ x 2
R607	RT0510214	1KΩ x 2
R608	RT0510214	1KΩ x 2
R609	RT0533314	33KΩ x 2
R610	RT0533314	33KΩ x 2
R611	RT0515314	15KΩ x 2
R612	RT0515314	15KΩ x 2
R613	RA0502017	Trimming, 5KΩ ±10% x 2
R614	RA0502017	Trimming, 5KΩ ±10% x 2
R615	RT0522414	220KΩ x 2
R616	RT0522414	220KΩ x 2
R617	RT0511214	1.1KΩ x 2
R618	RT0511214	1.1KΩ x 2
R619	RT0533314	33KΩ x 2
R620	RT0533314	33KΩ x 2
R621	RC1010212	1KΩ ±10%, ½W x 2
R622	RC1018212	1.8KΩ ±10%, ½W x 2
R623	RC1018212	1.8KΩ ±10%, ½W x 2
R624	RC1047212	4.7KΩ ±10%, ½W x 2
R625	RC1047212	4.7KΩ ±10%, ½W x 2
R626	RT0513314	13KΩ x 2
R627	RT0547414	470KΩ x 2
R628	RA0501010	Trimming, 500Ω ±10% x 2
R629	RA0501010	Trimming, 500Ω ±10% x 2
R630	RC1010012	10Ω ±10%, ½W x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R631	RC1010012	10Ω ±10%, ½W x 2
R632	GF0515114	150Ω x 2
R633	GF0515114	150Ω x 2
R634	GF0515114	150Ω x 2
R635	GF0515114	150Ω x 2
R636	GF0510214	1.0KΩ x 2
R637	GF0510214	1.0KΩ x 2
R638	GF0510214	1.0KΩ x 2
R639	GF0510214	1.0KΩ x 2
R640	RT0520214	2.0KΩ x 2
R641	RT0520214	2.0KΩ x 2
R642	GF0510114	100Ω x 2
R643	GF0510114	100Ω x 2
R644	GF0510114	100Ω x 2
R645	GF0510114	100Ω x 2
R646	GT0510002	10Ω ±5%, 2W x 2
R647	GT0510002	10Ω ±5%, 2W x 2
R648	GF0510012	10Ω ±5%, ½W x 2
R649	GF0510012	10Ω ±5%, ½W x 2
R650	GF0522112	220Ω ±5%, ½W x 2
R651	GF0522112	220Ω ±5%, ½W x 2
R652	GF0510012	10Ω ±5%, ½W x 2
R653	GF0510012	10Ω ±5%, ½W x 2
R654	GF0522112	220Ω ±5%, ½W x 2
R655	GF0522112	220Ω ±5%, ½W x 2
R656	RW1000503	0.5Ω ±10%, 3W x 2
R657	RW1000503	0.5Ω ±10%, 3W x 2
R658	RW1000503	0.5Ω ±10%, 3W x 2
R659	RW1000503	0.5Ω ±10%, 3W x 2
R660	RC1039212	3.9KΩ ±10%, ½W x 2
R661	RC1039212	3.9KΩ ±10%, ½W x 2
R662	RC1010112	100Ω ±10%, ½W x 2
R663	RC1010112	100Ω ±10%, ½W x 2
R664	RC1002212	2.2Ω ±10%, ½W x 2
R665	RC1002212	2.2Ω ±10%, ½W x 2
R666	RT0518114	180Ω x 2
R667	RT0518114	180Ω x 2
R668	RT0533414	330KΩ x 2
R669	RT0556214	5.6KΩ x 2
R670	RT0556214	5.6KΩ x 2
R671	RT0522414	220KΩ x 2
R672	RT0522414	220KΩ x 2
R673	RT0510214	1KΩ x 2
R674	RT0522414	220KΩ x 2
		CAPACITORS
C601	EE3350251	Electroly, 3.3μF ±20%, 25V x 2
C602	EE3350251	Electroly, 3.3μF ±20%, 25V x 2
C603	DD1620101	Ceramic, 200PF ±10% x 2
C604	DD1620101	Ceramic, 200PF ±10% x 2
C605	EA1070259	Electroly, 100μF, 25V x 2
C606	EA1070259	Electroly, 100μF, 25V x 2
C607	DD1003050	Ceramic, 3PF ±0.25PF, 500V x 2
C608	DD1003050	Ceramic, 3PF ±0.25PF, 500V x 2
C609	EA4760509	Electroly, 47μF, 50V x 2
C610	EA4760509	Electroly, 47μF, 50V x 2
C611	EE4760162	Electroly, 47μF, 16V x 2
C612	EE4760162	Electroly, 47μF, 16V x 2
C613	EA2270509	Electroly, 220μF, 50V x 2
C614	EA2270509	Electroly, 220μF, 50V x 2
C615	DF1768301	Film, 0.068μF ±20% x 2
C616	DF1768301	Film, 0.068μF ±20% x 2
C617	DF1710301	Film, 0.01μF ±20% x 2
C618	DF1710301	Film, 0.01μF ±20% x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C619	DK1610150	Ceramic, 100PF ±10% x 2
C620	DK1610150	Ceramic, 100PF ±10% x 2
C621	DF1710452	Film, 0.1μF, 200V x 2
C622	DF1710452	Film, 0.1μF, 200V x 2
C623	EE1050501	Electroly, 1μF ±20%, 50V x 2
C624	EE3350251	Electroly, 3.3μF ±20%, 25V x 2
C625	EE3350251	Electroly, 3.3μF ±20%, 25V x 2
C626	EA1070359	Electroly, 100μF, 35V x 2
C627	DF1710301	Film, 0.01μF ±20% x 2
C628	DF1710301	Film, 0.01μF ±20% x 2
C629	DF1710305	Film, 0.01μF ±20% x 2
C630	DF1710305	Film, 0.01μF ±20% x 2
C631	DF1710301	Film, 0.01μF ±20% x 2
		COILS AND SEMICONDUCTORS
L601	LL2380612	Choke Coil x 2
L602	LL2380612	Choke Coil x 2
H601	HT106401M	Transistor, 2SA640 M or L x 2
H602	HT106401M	Transistor, 2SA640 M or L x 2
H603	HT106401M	Transistor, 2SA640 M or L x 2
H604	HT106401M	Transistor, 2SA640 M or L x 2
H605	HT308753B	Transistor, 2SC875 C, D or E x 2
H606	HT308753B	Transistor, 2SC875 C, D or E x 2
H607	HT309451Q	Transistor, 2SC945 Q x 2
H608	HT309451Q	Transistor, 2SC945 Q x 2
H609	HT107331Q	Transistor, 2SA733 Q x 2
H610	HT107331Q	Transistor, 2SA733 Q x 2
H611	HT313821B	Transistor, 2SC1382 O or Y x 2
H612	HT313821B	Transistor, 2SC1382 O or Y x 2
H613	HT106821B	Transistor, 2SA682 O or Y x 2
H614	HT106821B	Transistor, 2SA682 O or Y x 2
H615	HD3003009	Diode, Zenner WZ-177 x 2
H616	HV0000312	Diode, MV-13 x 2
H617	HV0000312	Diode, MV-13 x 2
H618	HD2000501	Diode, W06B x 2
H619	HD2000501	Diode, W06B x 2
H620	HD2000501	Diode, W06B x 2
H621	HD2000501	Diode, W06B x 2
H622	HD1000101	Diode, 1N34A x 2
H623	HD1000101	Diode, 1N34A x 2
H624	HD1000101	Diode, 1N34A x 2
H625	HD1000101	Diode, 1N34A x 2
H626	HT313441E	Transistor, 2SC1344 E x 2
H627	HH0000912	Thermistor, 22D47 (200Ω) x 2
H628	HH0000912	Thermistor, 22D47 (200Ω) x 2
		MISCELLANEOUS
J601 ~ J630	YP1000099	Plug x 2
0810	285526702	Heat-Sink x 4
0812	281811806	Spacer x 4
0831	54022601E	Flat Washer P x 8
0832	51102606E	B.H.M. Screw x 8
P580	YD2855006	P.W. Board, Temp. Comp. x 2
	ZZ2855006	P.W. Board Ass'y

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
		MISCELLANEOUS
H581	HV0000212	Varistor, SV-3A x 2
H582	HV0000212	Varistor, SV-3A x 2
0818	285505601	Buffer x 2
0804	285526701	Heat-Sink x 2
0806	281810104	Support x 8
0808	281816007	Bracket x 4
0816	288310101	Support x 4
0833	51100314E	B.H.M. Screw x 12
0828	51380306P	R.H. Tap Screw x 12
0835	54040302N	Spring Washer x 4
H001 ~ H008	HT308971A	Transistor, 2SC897
J031 ~ J034	YJ0500019	Socket
J035 ~ J038	YJ0500019	Socket
P800	YD2855005	P.W. Board Ass'y, Power Supply
	ZZ2883105	P.W. Board Ass'y
		RESISTORS
R801	GJ0539001	39Ω ±5%, 1W
R802	RT0547214	4.7KΩ ±5%, ¼W
R803	RT0515214	1.5KΩ ±5%, ¼W
R804	RC1039212	3.9KΩ ±10%, ½W
R805	RT0527314	27KΩ ±5%, ¼W
R806	RA0502013	Trimming, 4.7KΩ (B)
R807	RT0556214	5.6KΩ ±5%, ¼W
R808	RT0522314	22KΩ ±5%, ¼W
R809	RT0510314	10KΩ ±5%, ¼W
R810	RT0568214	6.8KΩ ±5%, ¼W
R811	RT0522414	220KΩ ±5%, ¼W
R812	RC1010112	100Ω ±10%, ½W
R813	RT0539314	39KΩ ±10%, ½W
R814	RC1056212	5.6KΩ ±10%, ½W
R815	RC1056212	5.6KΩ ±10%, ½W
R816	RC1056212	5.6KΩ ±10%, ½W
R817	RC1056212	5.6KΩ ±10%, ½W
		CAPACITORS
C802	EA2270631	Electroly, 220μF, 63V
C803	EA3350509	Electroly, 3.3μF, 50V
C804	EA1060509	Electroly, 10μF, 50V
C805	EA4760169	Electroly, 47μF, 16V
C806	EA2270109	Electroly, 220μF, 10V
C807	DK1810351	Ceramic, 0.01μF +100%,-0%, 500V
C808	DK1810351	Ceramic, 0.01μF +100%,-0%, 500V
C809	DK1810351	Ceramic, 0.01μF +100%,-0%, 500V
C810	DK1810351	Ceramic, 0.01μF +100%,-0%, 500V
		SEMICONDUCTORS
H801	HT403314A	Transistor, 2SD331 C,D,E,F

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H802	HT309452A	Transistor, 2SC945 Q or R
H803	HT309452A	Transistor, 2SC945 Q or R
H804	HT309452A	Transistor, 2SC945 Q or R
H805	HT309452A	Transistor, 2SC945 Q or R
H806	HD2000413	Diode, SIB-01-02
H807	HD2000413	Diode, SIB-01-02
H808	HD3002309	Diode, WZ-071
H809	HD2000413	Diode, SIB-01-02
H810	HD2000413	Diode, SIB-01-02
H811	HD2000501	Diode, W06B
		MISCELLANEOUS
L801	LY4024003	Relay
J801 ~ J816	YP1000099	Plug
0925	273026702	Heat-Sink
1111	51060308E	P.H.M. Screw x 2
1112	53110303E	Hexagon Nut
1113	54040302N	Spring Washer
2636	62031650W	Lug
C005	EA1070631	Electroly Cap., 100μF, +50%,-10%, 63V
P850	YD2855012	P.W. Board, Rectifier
	ZZ2855012	P.W. Board Ass'y
		CAPACITORS AND DIODE
C851	DF2722350	Film Cap., 0.022μF ±20%, 400V
C852	DF2722350	Film Cap., 0.022μF ±20%, 400V
H851	HD2000601	Diode, U11C
H852	HD2000601	Diode, U11C
H853	HD2000701	Diode, U12C
H854	HD2000701	Diode, U12C
		MISCELLANEOUS
J851 ~ J856	YP1000099	Plug
0403	285516050	Bracket K
0408	281816003	Bracket
0409	281816004	Bracket
0419	285527401	Reflector
0420	285510102	Support x 2
0426	287105302	Cover x 4
0432	288310701	Sheet x 2
0503	51100306A	B.H.M. Screw x 6
0505	51102605A	B.H.M. Screw x 6
0507	51570306B	P.H. Tapt Screw x 8
0508	54050300R	T.L. Washer OR x 8
0515	51570306B	P.H. Tapt Screw x 2
0521	51042605A	F.H.M. Screw x 2
0522	51102605A	B.H.M. Screw x 2
0523	54042602N	Spring Washer x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0525	51100406A	B.H.M. Screw x 4
0528	51100306A	B.H.M. Screw x 2
P350	YD2855011	P.W. Board, Loudness
	ZZ2883111	P.W. Board Ass'y
		RESISTORS
R351	RT0522314	22KΩ ±5%, ¼W
R352	RT0522314	22KΩ ±5%, ¼W
R353	RT0522314	22KΩ ±5%, ¼W
R354	RT0522314	22KΩ ±5%, ¼W
R355	RT0547214	4.7KΩ ±5%, ¼W
R356	RT0547214	4.7KΩ ±5%, ¼W
R357	RT0547214	4.7KΩ ±5%, ¼W
R358	RT0547214	4.7KΩ ±5%, ¼W
		CAPACITORS
C351	DK1668101	Ceramic, 680PF ±10%
C352	DK1668101	Ceramic, 680PF ±10%
C353	DK1668101	Ceramic, 680PF ±10%
C354	DK1668101	Ceramic, 680PF ±10%
C355	EM1040251	Electroly, 0.1μF ±20%
C356	EM1040251	Electroly, 0.1μF ±20%
C357	EM1040251	Electroly, 0.1μF ±20%
C358	EM1040251	Electroly, 0.1μF ±20%
		MISCELLANEOUS
J351 ~ J355	YP1000099	Plug
PL01	YD2883004	P.W. Board, SP. Mode
	ZZ2883004	P.W. Board Ass'y
		RESISTORS
RL01	RJ1010102	100Ω ±10%, 2W
RL02	RJ1010102	100Ω ±10%, 2W
RL03	RJ1010102	100Ω ±10%, 2W
RL04	RJ1010102	100Ω ±10%, 2W
JL01	YP1000099	Plug
JL02	YP1000099	Plug
JL03	YP1000099	Plug
JL04	YP1000099	Plug
SL01	SP0403006	Push Switch
P250	YD2855002	P.W. Board, Hi Filter,Tape Monitor
	ZZ2855002	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R251	RT0547214	Resistor, 4.7KΩ
R252	RT0547214	Resistor, 4.7KΩ
R253	RT0547214	Resistor, 4.7KΩ
R254	RT0547214	Resistor, 4.7KΩ
R255	RT0510514	Resistor, 1MΩ
R256	RT0510514	Resistor, 1MΩ
R257	RT0510514	Resistor, 1MΩ
R258	RT0510514	Resistor, 1MΩ
R259	RT0510214	Resistor, 1KΩ
R260	RT0510214	Resistor, 1KΩ
R261	RT0510214	Resistor, 1KΩ
R262	RT0510214	Resistor, 1KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
		CAPACITORS
C251	DF1682201	Film, 0.0082μF ±10%
C252	DF1682201	Film, 0.0082μF ±10%
C253	DF1682201	Film, 0.0082μF ±10%
C254	DF1682201	Film, 0.0082μF ±10%
		MISCELLANEOUS
J251 ~ J256	YP1000099	Plug
S251	SP0403006	Pushswitch
P650	YD2855008	P.W. Board, Function Indicator
	ZZ2883108	P.W. Board Ass'y
		MISCELLANEOUS
M651 ~ M656	IN1006301	Lamp, 6.3V, 40mA
J651 ~ J657	YP1000094	Plug
PJ01	YD2883003	P.W. Board, Tone Volume
	ZZ2883003	P.W. Board Ass'y
		RESISTORS **All resistors are ±5% and ¼W, unless otherwise indicated.**
RJ01	RU0204001	Variable, 200KΩ (B)
RJ02	RU0204001	Variable, 200KΩ (B)
RJ03	RU0204001	Variable, 200KΩ (B)
RJ04	RT0527314	27KΩ
RJ05	RT0527314	27KΩ
RJ06	RT0527314	27KΩ
RJ07	RT0527314	27KΩ
RJ08	RT0527314	27KΩ
RJ09	RT0527314	27KΩ
RJ10	RT0527314	27KΩ
RJ11	RT0527314	27KΩ
RJ12	RT0527314	27KΩ
RJ13	RT0527314	27KΩ
RJ14	RT0527314	27KΩ
RJ15	RT0527314	27KΩ
RJ16	RT0527314	27KΩ
RJ17	RT0527314	27KΩ
RJ18	RT0527314	27KΩ
RJ19	RT0527314	27KΩ
RJ20	RT0510314	10KΩ
RJ21	RT0510314	10KΩ
RJ22	RT0510314	10KΩ
RJ23	RT0510314	10KΩ
RJ24	RT0510314	10KΩ
RJ25	RT0510314	10KΩ
RJ26	RT0510314	10KΩ
RJ27	RT0510314	10KΩ
RJ28	RT0568214	6.8KΩ
RJ29	RT0568214	6.8KΩ
RJ30	RT0568214	6.8KΩ
RJ31	RT0568214	6.8KΩ
RJ32	RT0510314	10KΩ
RJ33	RT0510314	10KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RJ34	RT0510314	10KΩ
RJ35	RT0510314	10KΩ
RJ36	RT0562414	620KΩ
RJ37	RT0562414	620KΩ
RJ38	RT0562414	620KΩ
RJ39	RT0562414	620KΩ
RJ40	RT0510514	1MΩ
RJ41	RT0510514	1MΩ
RJ42	RT0510514	1MΩ
RJ43	RT0510514	1MΩ
		CAPACITORS
CJ01	DF1615305	Film, 0.015μF ±10%, 50V
CJ02	DF1615305	Film, 0.015μF ±10%, 50V
CJ03	DF1615305	Film, 0.015μF ±10%, 50V
CJ04	DF1615305	Film, 0.015μF ±10%, 50V
CJ05	DF1615305	Film, 0.015μF ±10%, 50V
CJ06	DF1615305	Film, 0.015μF ±10%, 50V
CJ07	DF1615305	Film, 0.015μF ±10%, 50V
CJ08	DF1615305	Film, 0.015μF ±10%, 50V
CJ09	DF1656205	Film, 5600PF ±10%, 50V
CJ10	DF1656205	Film, 5600PF ±10%, 50V
CJ11	DF1656205	Film, 5600PF ±10%, 50V
CJ12	DF1656205	Film, 5600PF ±10%, 50V
CJ13	DF1612205	Film, 1200PF ±10%, 50V
CJ14	DF1612205	Film, 1200PF ±10%, 50V
CJ15	DF1612205	Film, 1200PF ±10%, 50V
CJ16	DF1612205	Film, 1200PF ±10%, 50V
CJ17	DF1633205	Film, 3300PF ±10%, 50V
CJ18	DF1633205	Film, 3300PF ±10%, 50V
CJ19	DF1633205	Film, 3300PF ±10%, 50V
CJ20	DF1633205	Film, 3300PF ±10%, 50V
CJ21	DD1650001	Film, 50PF ±10%, 50V
CJ22	DD1650001	Film, 50PF ±10%, 50V
CJ23	DD1650001	Film, 50PF ±10%, 50V
CJ24	DD1650001	Film, 50PF ±10%, 50V
PD01	YD2883002	P.W. Board, Tone Amp
	ZZ2883002	P.W. Board Ass'y
		RESISTORS **All resistors are ±5% and ¼W, unless otherwise indicated.**
RD01	RN1022514	2.2MΩ ±10%, ¼W
RD02	RN1022514	2.2MΩ ±10%, ¼W
RD03	RN1022514	2.2MΩ ±10%, ¼W
RD04	RN1022514	2.2MΩ ±10%, ¼W
RD05	RT0568314	68KΩ
RD06	RT0568314	68KΩ
RD07	RT0568314	68KΩ
RD08	RT0568314	68KΩ
RD09	RT0547314	47KΩ
RD10	RT0547314	47KΩ
RD11	RT0547314	47KΩ
RD12	RT0547314	47KΩ
RD13	RT0510314	10KΩ
RD14	RT0510314	10KΩ
RD15	RT0510314	10KΩ
RD16	RT0510314	10KΩ
RD17	RT0539114	390Ω
RD18	RT0539114	390Ω
RD19	RT0539114	390Ω
RD20	RT0539114	390Ω

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
RD21	RT0510414	100KΩ
RD22	RT0510414	100KΩ
RD23	RT0510414	100KΩ
RD24	RT0510414	100KΩ
		CAPACITORS
CD01	EV1050256	Electroly, 1μF +50%, -20%, 25V
CD02	EV1050256	Electroly, 1μF +50%, -20%, 25V
CD03	EV1050256	Electroly, 1μF +50%, -20%, 25V
CD04	EV1050256	Electroly, 1μF +50%, -20%, 25V
CD05	EV3350356	Electroly, 3.3μF +50%, -20%, 35V
CD06	EV3350356	Electroly, 3.3μF +50%, -20%, 35V
CD07	EV3350356	Electroly, 3.3μF +50%, -20%, 35V
CD08	EV3350356	Electroly, 3.3μF +50%, -20%, 35V
CD09	EQ4750161	Electroly, 4.7μF ±30%, 16V
CD10	EQ4750161	Electroly, 4.7μF ±30%, 16V
CD11	EQ4750161	Electroly, 4.7μF ±30%, 16V
CD12	EQ4750161	Electroly, 4.7μF ±30%, 16V
		SEMICONDUCTORS
HD01	HT313283A	Transistor, 2SC1328 S, T or U
HD02	HT313283A	Transistor, 2SC1328 S, T or U
HD03	HT313283A	Transistor, 2SC1328 S, T or U
HD04	HT313283A	Transistor, 2SC1328 S, T or U
HD05	HT107223A	Transistor, 2SA722 S, T or U
HD06	HT107223A	Transistor, 2SA722 S, T or U
HD07	HT107223A	Transistor, 2SA722 S, T or U
HD08	HT107223A	Transistor, 2SA722 S, T or U
		MISCELLANEOUS
0531	51102605A	B.H.M. Screw
0429	288310401	Retainer
P900	YD2855010	P.W. Board, Balance Control
	ZZ2855010	P.W. Board Ass'y
		RESISTORS
R901	RT0533214	3.3KΩ ±5%, ¼W
R902	RT0533214	3.3KΩ ±5%, ¼W
R903	RT0533214	3.3KΩ ±5%, ¼W
R904	RT0533214	3.3KΩ ±5%, ¼W
R905	RX0203012	Variable, 20KΩ (G)
R906	RX0203012	Variable, 20KΩ (G)
R907	RS0203004	Variable, 20KΩ (G)
		MISCELLANEOUS
J901 ~ J910	YP1000099	Plug
RO02	RG0503002	Variable, 50KΩ, Volume
RO01	RM0503050	Variable, 50KΩ (B), Dimension
SO02	SR0905004	Rotary Switch, Mode
J021	YJ0700006	Jack, SQ Decoder
0911	285110450	Retainer K
1020	51100312S	B.H.M. Screw x 2
1021	59030805P	Washer x 2
SO01	SR1205004	Rotary Switch, Selector
J022	YJ0100084	Jack, Headphone (Front)
RO05	RJ1047001	Resistor, 47Ω ±10%, 1W
RO06	RJ1047001	Resistor, 47Ω ±10%, 1W

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
J023	YJ0100084	Jack, Headphone (Rear)
R003	RJ1047001	Resistor, 47Ω ±10%, 1W
R004	RJ1047001	Resistor, 47Ω ±10%, 1W
J024 ~ J027	YJ0800019	Jack, Lamp
0411	285427401	Reflector x 4
0412	285427101	Holder x 4
0510	51100306A	B.H.M. Screw x 4
0511	54050300R	T.L. Washer OR x 4
0512	51570306B	P.H. Tapt Screw x 4
M002 ~ M005	IN1008007	Lamp. Meter Illumi.
J028	YJ0800019	Jack, Quad Indicator
0414	285327402	Reflector
0415	285327102	Holder
0517	51100306A	B.H.M. Screw
0518	51570306B	P.H. Tapt Screw
1126	62031650W	Lug, Earth
M001	IN1008007	Lamp, Quad Indicator
0422	285510901	Shield
0423	285512002	Insulator
0425	280312001	Insulator
M006	IM1104205	DC Meter, FL
M007	IM1104206	DC Meter, FR
M008	IM1104205	DC Meter, RL
M009	IM1104206	DC Meter, RR
S005	SP0201010	Pushswitch, Power
G001	BF1040001	Printed Compo.
C007	DF1722380	Film Cap., 0.0022μF ±20%, 150VAC
S003	SS0802007	Slide Switch
J044	YL0105003	Terminal, 5P
0616	285116007	Bracket
J020	YJ1100012	Jack
0723	51100306S	B.H.M. Screw x 2
0724	53110303E	Hexagon Nut x 2
D	288316040	Bracket Ass'y
0603	288316001	Bracket
J001	YT0202007	Terminal, Scope (2P)
J002	YT0202007	Terminal, Scope (2P)
J003	YT0208002	Terminal, Tape (8P)
J004	YT0208002	Terminal, Tape (8P)
J005	YT0204003	Terminal, Pre Out, Main In
J006	YT0204003	Terminal, Pre Out, Main In
J007	YT0206003	Terminal, Phono, Tuner, Aux
J008	YT0304005	Terminal, Spk.
J009	YT0304005	Terminal, Spk.
J010	YT0304005	Terminal, Spk.
J011	YT0304005	Terminal, Spk.

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REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
J012	YJ0400018	Jack, AC Outlet
J013	YJ0400018	Jack, AC Outlet
J014	YT0101003	Terminal, Ground
J016	YP1000097	Plug, Pre Out, Main In
J017	YP1000097	Plug, Pre Out, Main In
J018	YP1000097	Plug, Pre Out, Main In
J019	YP1000097	Plug, Pre Out, Main In
0703	51100308S	B.H.M. Screw x 8
0704	53110303E	Hexagon Nut x 8
0707	51100308S	B.H.M. Screw x 16
0708	53110303E	Hexagon Nut x 16
0711	55060365S	T.R. Rivet x 4
0717	62041760W	Lug
0719	54050400R	T.L. Washer OR
0610	145525903	Bush
J015	YJ0800012	Socket, Fuse Holder
C001	DK1710301	Ceramic Cap., 0.001μF ±20%, 50V
C002	DK1710301	Ceramic Cap., 0.001μF ±20%, 50V
F001	FS1050004	Fuse, 5A
W001	YC0240010	AC Cord, For CANADA
A	288306340	Front Panel Ass'y
0103	288306301	Escutcheon
0104	285540101	Frame
0105	288315801	Window
0106	281825905	Bush x 7
0107	273125901	Bush x 2
0108	285025901	Bush x 3
0109	285505301	Cover
0431	288330201	Dial
J029	YL0107008	Terminal, 7P (SE-1)
C006	ED1080631	Electroly Cap., 1000μF +50%,-10%, 63V
B	281815440	Knob Ass'y
0118	281815404	Knob x 3
0119	71400149Q	Spring x 3
C	281815441	Knob Ass'y
0121	281815405	Knob x 3
0122	71400159Q	Spring x 3
0930	288316002	Bracket
0928	138200503	Clamper x 16
S004	SR0602010	Rotary Switch, Amp Mode
0231	951022101	Label, For CANADA
0232	288326508	Indicator, For CANADA
W002	YW2883001	Wire Material
W003	YX2883001	Wire Material
0134	275905701	Leg x 4

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0313	51490410S	B.H.M. Screw x 4
0617	281805501	Collar x 2
0725	51100312S	B.H.M. Screw x 2
0726	53110303E	Hexagon Nut x 2
0729	51100304S	B.H.M. Screw x 2
0903	288310550	Chassis K
0918	285110101	Support x 2
0920	288310901	Shield
0923	285510103	Support x 2
0927	282100501	Clamper
6436	138200503	Clamper
L001	TS6140305	Power Transf.
C003	EC2090501	Electroly Cap., 20mF, +50%, -10%, 50V
C004	EC2090501	Electroly Cap., 20mF, +50%, -10%, 50V
1003	51570306B	P.H. Tapt Screw x 10
1004	51100306S	B.H.M. Screw x 6
1007	51570306B	P.H. Tapt Screw x 8
1011	51100512A	B.H.M. Screw x 4
1012	53110501A	Hexagon Nut x 4
1013	54040502A	Spring Washer x 4
1014	54020501A	Flat Washer P x 4
1016	53110303E	Hexagon Nut x 2
1017	54040302N	Spring Washer x 2
1019	51100306S	B.H.M. Screw x 2
1022	54040402N	Spring Washer x 2
1026	51100306S	B.H.M. Screw x 4
1027	51100306S	B.H.M. Screw x 4
1028	51100306S	B.H.M. Screw x 4
1029	51100306S	B.H.M. Screw x 4
1030	51100306S	B.H.M. Screw x 4
1031	51100306S	B.H.M. Screw x 2
1103	51570408B	P.H. Tapt Screw x 4
1104	54020401E	Flat Washer P x 4
1106	51570408B	P.H. Tapt Screw x 2
1108	51570306B	P.H. Tapt Screw x 2
1109	51570306B	P.H. Tapt Screw
1123	51570306B	P.H. Tapt Screw x 7
1124	51570306B	P.H. Tapt Screw x 10
1125	54050300R	T.L. Washer OR x 10
6536	62031650W	Lug x 3
0112	281815401	Knob x 6
0113	281815402	Knob
0114	285015401	Knob x 3
0115	281815403	Knob x 4
0116	288615402	Knob
0124	285525701	Lid
0125	257711803	Spacer x 4
0127	285525750	Lid K
0131	285712001	Insulator
0132	285512001	Insulator x 2
0133	288312001	Insulator
0202	288326501	Indicator
0203	288326502	Indicator, For CANADA
0211	257886101	Label

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0212	257886102	Label
0213	257886103	Label
0219	282186101	Label, LL24902, For CANADA
0220	282186102	Label, Fuse Caution
0224	951110101	Label, UL
0225	245786104	Label, CSA, For CANADA
0730	51100306S	B.H.M. Screw x 2
0417	285500701	Strip
0434	282711801	Spacer x 2
0303	52017039J	H. Head Bolt x 4
0305	51100406S	B.H.M. Screw x 9
0309	51480406S	B.H.M. Screw x 4
0320	288306450	Case K, For CANADA
0322	288600301	Punched Plate
0323	288205701	Leg x 4
0324	52010420A	H. Head Bolt x 4
0325	54080400R	T.L. Washer RR x 4
1202	288385101	Instructions
1209	288385601	Schematic Diagram
1210	288385602	Schematic Diagram, For CANADA
1217	281885104	Instructions
1218	281885108	Instructions
1220	288385107	Instructions
1223	257785450	Guarantee Card K
1302	288380101	Packing Case
1303	288380111	Packing Case
1305	288380102	Packing Case, For CANADA
1306	288380112	Packing Case, For CANADA
1308	285580301	Partitioner
1309	285580302	Partitioner
1310	285580303	Partitioner x 2, For CANADA
1312	901403540	Polyethylen Bag
1313	901433538	Polyethylen Bag, For CANADA
1314	901302501	Polyethylen Bag
1317	102980401	Sleeve
1319	273182101	Silicagel x 2
1322	952281501	Serial NO Card x 4
1323	952301512	Serial NO Card x 4 For CANADA
0130	285125703	Lid
0135	51216059E	Screw x 4
0221	285386101	Label
0131	285125703	Lid
0135	51216059E	Screw x 4
0221	285386101	Label

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TECHNICAL SPECIFICATIONS

Input Impedance-Low level input	Phono 47 Kohm
-High level input	100 Kohm
Input Sensitivity-Phono	2.0mV for 25W output
-High level	150mV for 25W output
Frequency Response	1.0dB, 20Hz to 20KHz at 1W output
Intermodulation Distortion	Less than 0.3% at rated power output (S.M.P.T.E.)
Total Harmonic Distortion	Less than 0.3% at rated power output 20Hz to 20KHz with all channels driven
Damping Factor	Greater than 40 into 8 ohm load
Total Noise-From magnetic phono input to power amp output	Less than 2.8μV equivalent input at rated output into 8 ohm load
Volume Tracking	Within 3dB
Rated Continuous (RMS) Output per channel, all channels operating simultaneously	25Wx4 at 8 ohms 70Wx2 at 8 ohms
Comparable Total Music Power	150W at 8 ohms

GENERAL

Power Requirements	120V AC 50 to 60Hz
Power Consumption-at rated power output, all channels	400 watts
-idling (no signals)	25 watts
Dimensions-Panel Width	15-3/8inches
-Panel Height	5-3/4inches
-Depth	14-3/8inches
Weight-Unit alone	33 lbs
-Packed for shipment	40.7 lbs

* These specifications and exterior designs may be changed for improvement without notice.

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